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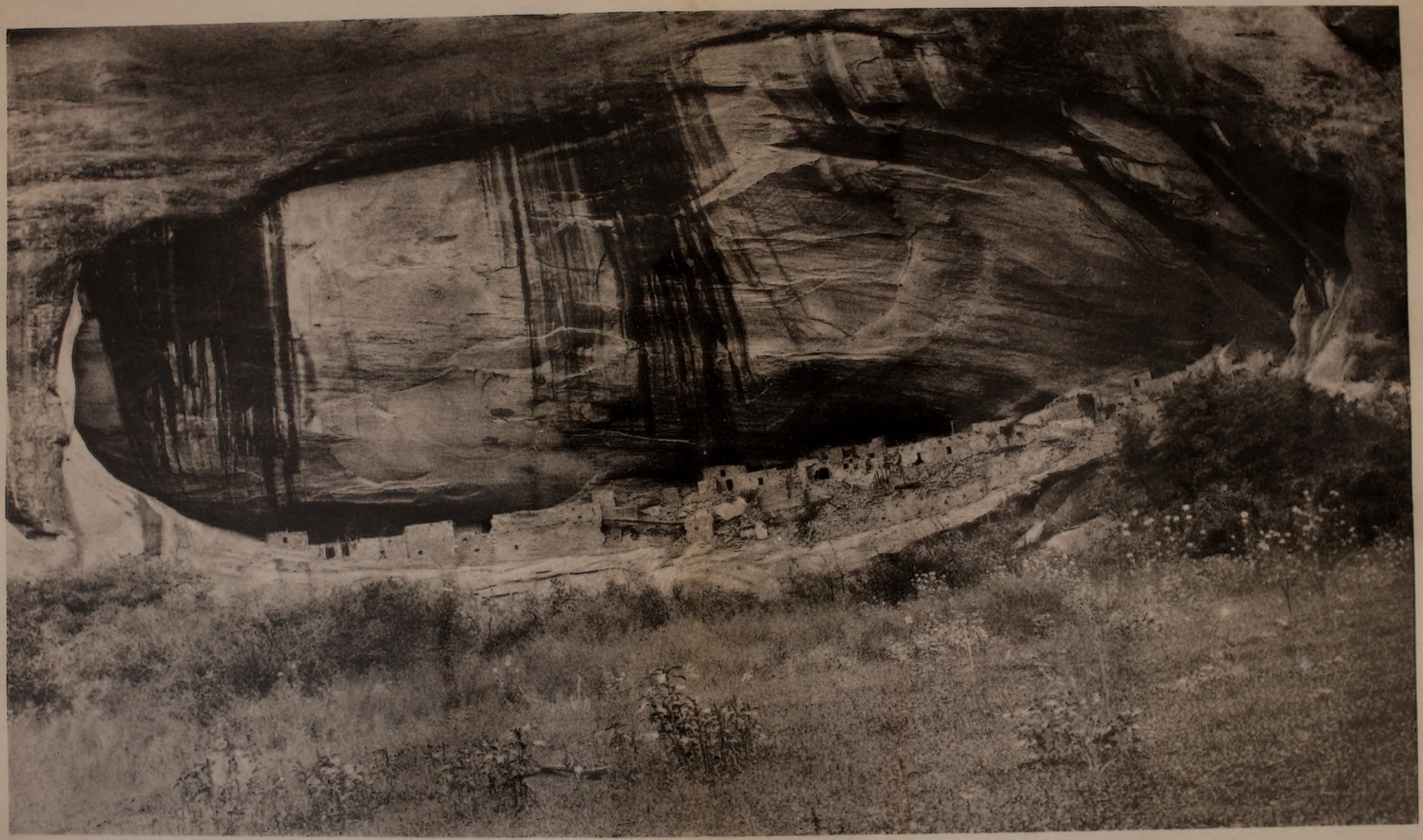

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SMITHSONIAN INSTITUTION
BUREAU OF AMERICAN ETHNOLOGY
BULLETIN 50

PRELIMINARY REPORT ON A VISIT TO THE NAVAHO NATIONAL MONUMENT ARIZONA

BY

JESSE WALTER FEWKES

SMITHSONIAN INSTITUTION
NATIONAL MUSEUM
217644

WASHINGTON
GOVERNMENT PRINTING OFFICE
1911

SMITHSONIAN
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LETTER OF TRANSMITTAL

SMITHSONIAN INSTITUTION,
BUREAU OF AMERICAN ETHNOLOGY,
Washington, D. C., March 16, 1910.

SIR: I have the honor to submit herewith, for publication, with your approval, as Bulletin 50 of this Bureau, the manuscript of a paper by Dr. Jesse Walter Fewkes, entitled "Preliminary Report on a Visit to the Navaho National Monument, Arizona."

Yours, respectfully,

F. W. HODGE,
Ethnologist in Charge.

DR. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution,
Washington, D. C.

CONTENTS

	Page
Introduction	1
Routes to the Navaho National Monument	6
Route from Flagstaff to Marsh pass	6
Major antiquities	10
Ruin A	10
Cliff-house B	10
Swallows Nest	12
Betatakin	12
Kitsiel (Keet Seel)	16
Scaffold House	18
Cradle House	20
Ladder House	20
Forest-glen House	21
Pine-tree House	21
Trickling-spring House	21
Characteristic features of ruins	22
Minor antiquities	26
Pottery	27
Cliff-dwellers cradle	29
Miscellaneous objects	30
Summary and conclusions	30
Recommendations	35

ILLUSTRATIONS

PLATE 1. Kitsiel ..... Frontispiece
2. Inscription House 1
3. Wukoki ruin at Black Falls 2
4. Ruin A, southwest of Marsh pass 4
5. Ruin B, at Marsh pass 7
6. View into Laguna canyon from Marsh pass 9
7. Swallows Nest 10
8. Betatakin—general view 13
9. Betatakin—western end 14
10. Ground plan of Betatakin 14
11. Betatakin—central part 17
12. Pictographs at Betatakin 18
13. Ground plan of Kitsiel (Keet Seel) ruin 21
14. Diagrams showing kiva roof construction 23
15. Pottery from Navaho National Monument 24
16. Pottery from Navaho National Monument 26
17. Pottery and stone implements from Navaho National Monument 28
18. Pottery from Navaho National Monument 30
19. Cliff-dwellers cradle—front 32
20. Cliff-dwellers cradle—rear 32
21. Cliff-dwellers cradle—side 32
22. Sketch map of the Navaho National Monument 34

FIGURE 1. Scaffold of Scaffold House 18
2. Ground plan of Trickling-spring House 22
3. Design on cliff-dwellers cradle 29

INSCRIPTION HOUSE

(From a photograph by William B. Douglass.)

PRELIMINARY REPORT ON A VISIT TO THE NAVAHO NATIONAL MONUMENT, ARIZONA

By Jesse Walter Fewkes

INTRODUCTION

On the completion of the work of excavation and repair of Cliff Palace, in the Mesa Verde National Park, in southern Colorado, in charge of the writer, under the Secretary of the Interior, he was instructed by Mr. W. H. Holmes, then Chief of the Bureau of American Ethnology, to make an archeologic reconnaissance of the northern part of Arizona, where a tract of land containing important prehistoric ruins had been reserved by the President under the name Navaho National Monument. In the following pages are considered some of the results of that trip, a more detailed account of the ruins being deferred to a future report, after a more extended examination shall have been made.[a] Mention is made of a few objects collected, and recommendations are submitted for future excavation and repair work on these remarkable ruins to preserve them for examination by students and tourists. As will appear later, a scientific study of them is important, for they are connected with Hopi pueblos still inhabited, in which are preserved traditions concerning the ruins and their ancient inhabitants.

The present population of Walpi, a Hopi pueblo, is made up of descendants of various clans, whose ancestors once lived in distant villages, now ruins, situated in various directions from its site on the East mesa. One of the problems before the student of the Pueblos is to locate accurately the ancestral villages where these clans lived in prehistoric times. From an examination of the architecture of these villages and a study of the character of secular and cult objects found in them, the culture of the clans that inhabited these dwellings could be roughly determined. The culture at any epoch in the history of the clan being known, data are available that may make possible comparison and correlation with that which is still more ancient: in other words, that may add a chapter to our knowledge of the migrations of the Hopi Indians in prehistoric times.

[a] The author's first visit to these ruins was made in September, 1909, and he returned to the work in the following May. A few notes made on the latter trip on ruins not observed during the former are incorporated in this report.

The writer has already identified some of the ancient houses of those Hopi clans that claim to have dwelt formerly south of Walpi, on the Little Colorado near Winslow, but has not investigated the ruins to the north, in which once lived the Snake, Horn, and Flute clans. An investigation of the origin and migrations of this contingent is instructive because it is claimed that these clans were among the first to arrive at Walpi, or that they united with the previously existing Bear clan, forming the nucleus of the population of that pueblo.

A preliminary step in the investigation of the culture of the clans that played a most important part in founding Walpi and giving rise to the Hopi people would be the identification of the houses (now ruins) of the Snake, Horn, and Flute clans, the existence of which in the region north of Walpi is known with a greater or less degree of certainty from Hopi legends. An archeologic study of these ruins and of cult objects found in them would reveal some of the prehistoric features of the culture of the ancient Snake clans. "The ancient home of my ancestors," said the old Snake chief to the writer, "was called Tokónabi,[a] which is situated not far from Navaho mountain. If you go there, you will find ruins of their former houses." In previous years the writer had often looked with longing eyes to the mountains that formed the Hopi horizon on the north where these mysterious homes of the Snake and Flute clans were said to be situated, but had never been able to explore them. In 1909 the opportunity came to visit this region, and while some of the ruins found may not be identifiable with Tokónabi, they were abodes of people almost identical in culture with the ancient Snake, Horn, and Flute clans of the Hopi.

References to the northern ruins occur frequently in Hopi legends of the Snake and Flute clans, and even accounts of the great natural bridges lately seen for the first time by white people were given years ago by Hopi familiar with legends of these families. The writer heard the Hopi tell of their former homes among the "high rocks" in the north and at Navaho mountain, fifteen years ago, at which time they offered to guide him to them. The stories of the great cave-ruins to the north were heard even earlier from the lips of the Hopi priests by another observer. Mr. A. M. Stephen, the pioneer in Hopi studies, informed the writer that he had learned of great ruins in the north as far back as 1885, and Mr. Cosmos Mindeleff, aided by Mr. Stephen, published the names of the clans which, according to the Hopi, inhabited them.

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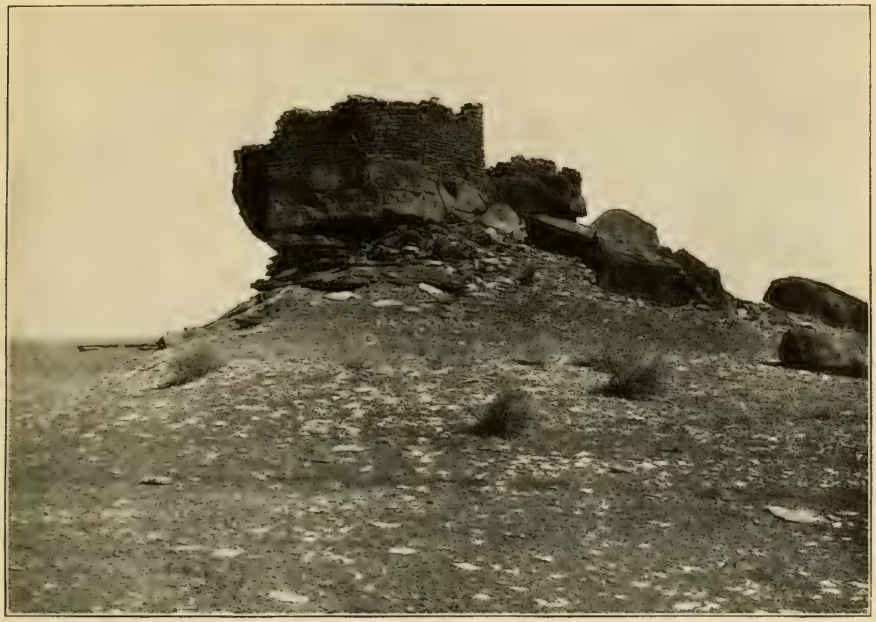
[a] The exact situation of Tokónabi has never been identified by archeologists. Ruins are called by the Navaho *nasazi bogondi*, "houses of the *nasazi*." The name Tokónabi may be derived from Navaho *to*, "water;" *ko*, contraction of *bokho*, "canyon;" and the Hopi locative *obi*, "place of." The derivation from Navaho *boko*, "coal oil," is rejected, since it is very modern.



a. FROM THE SOUTH

b. FROM THE NORTH

WUKOKI RUIN AT BLACK FALLS

Victor Mindeleff[a] summarizes the Hopi traditions concerning Tokónabi still preserved by the Horn and Flute clans of Walpi:

> The Horn people, to which the Lenbaki [Flute] belonged, have a legend of coming from a mountain range in the east.
>
> Its peaks were always snow covered, and the trees were always green. From the hillside the plains were seen, over which roamed the deer, the antelope, and the bison, feeding on never-failing grasses. [Possibly the Horn people were so called from an ancient home where horned animals abounded.] Twining through these plains were streams of bright water, beautiful to look upon. A place where none but those who were of our people ever gained access.
>
> This description suggests some region of the headwaters of the Rio Grande. Like the Snake people, they tell of a protracted migration, not of continuous travel, for they remained for many seasons in one place, where they would plant and build permanent houses. One of these halting places is described as a canyon with high, steep walls, in which was a flowing stream; this, it is said, was the Tségi (the Navajo name for Canyon de Chelly).[b] Here they built a large house in a cavernous recess, high up in the canyon wall. They tell of devoting two years to ladder making and cutting and pecking shallow holes up the steep rocky side by which to mount to the cavern, and three years more were employed in building the house. . . .
>
> The legend goes on to tell that after they had lived there for a long time a stranger happened to stray in their vicinity, who proved to be a Hopituh [Hopi], and said that he lived in the south. After some stay he left and was accompanied by a party of the "Horn" [clan], who were to visit the land occupied by their kindred Hopituh and return with an account of them; but they never came back. After waiting a long time another band was sent, who returned and said that the first emissaries had found wives and had built houses on the brink of a beautiful canyon, not far from the other Hopituh dwellings. After this many of the Horns grew dissatisfied with their cavern home, dissensions arose, they left their home and finally they reached Tusayan.

The early legends of the Snake clans tell how bags containing their ancestors were dropped from a rainbow in the neighborhood of Navaho mountain. They recount how they built a pentagonal home and how one of their young men married a Snake girl who gave birth to reptiles, which bit the children and compelled the people to migrate. They left their canyon homes and went southward, building houses at the stopping-places all the way from Navaho mountain to Walpi. Some of these houses, probably referring to their *kivas* and *kihus*, legends declare, were round[c] and others square.

Some of the ruins here mentioned have been known to white men for many years. There is evidence that they have been repeatedly

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[a] See A Study of Pueblo Architecture, Tusayan and Cibola, in *Eighth Annual Report of the Bureau of Ethnology*. The legend was obtained by Mr. A. M. Stephen.

[b] Evidently a mistake in identification of localities. Although the Navaho name *Tségi* has persisted as the designation of Canyon de Chelly, Arizona, there is little doubt that when the Hopi gave to Stephen the tradition of their former life in "Tségi," they did not refer, as he interpreted the narration, to what is now called Canyon de Chelly, but to Laguna canyon, likewise bordered by high cliffs, which the Navaho also designate *Tségi*. The designation Canyon de Chelly was used by Simpson in 1850 (Sen. Ex. Doc. no. 64, 31st Cong., 1st sess.), who wrote (p. 69, footnote): "The orthography of this word I got from Señor Donaciano Vigil, secretary of the province, who informs me that it is of Indian origin. Its pronunciation is chay-e."—J. W. F.

[c] The circular type disappeared before they arrived in the valley below Walpi. Legends declare that the original Snake kivas were circular, and there are references, in legends of clans other than those that formerly lived in the north, to circular kivas formerly used by the Hopi.

visited by soldiers, prospectors, and relic hunters. The earliest white visitor of whom there is any record was Lieutenant Bell, of the 2d (?) Infantry, U. S. A.,[a] whose name, with the date 1859, is still to be seen cut on a stone in a wall of ruin A.

A few years ago information was obtained from Navaho by Richard and John Wetherill of the existence of some of the large cliff-houses on Laguna creek and its branches; the latter has guided several parties to them. Among other visitors in 1909 may be mentioned Dr. Edgar L. Hewett, director of the School of American Archæology of the Archæological Institute of America. A party[b] from the University of Utah, under direction of Prof. Byron Cummings, has dug extensively in the ruins and obtained a considerable collection.

The sites of several ruins in the Navaho National Monument,[c] which was created on his recommendation, have been indicated by Mr. William B. Douglass, United States Examiner of Surveys, General Land Office, on a map accompanying the President's proclamation, and also on a recent map issued by the General Land Office. Although his report has not yet been published, he has collected considerable data, including photographs of Betatakin, Kitsiel (Keetseel), and the ruin called Inscription House, situated in the Nitsi (Neetsee) canyon. While Mr. Douglass does not claim to be the discoverer of these ruins, credit is due him for directing the attention of the Interior Department to the antiquities of this region and the desirability of preserving them.

The two ruins[d] in Nitsi (Neetsee),[e] West canyon, are not yet included in the Navaho Monument, but according to Mr. Douglass these are large ones, being 300 and 350 feet long, respectively,[f] and promise a rich field for investigation. That these ruins will yield large collections is indicated by the fact that the several specimens of minor antiquities in a collection presented to the Smithsonian Institution by Mr. Janus, the best of which are here figured (pls. 15–18), came from this neighborhood, possibly from one of these ruins.

The ruins in West canyon (pl. 2) are particularly interesting from the fact that the walls of some of the rooms are built of elongated

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[a] Probably Lieut. William Hemphill Bell, of the Third Infantry, United States Army.

[b] Since the writer's return to Washington this party has spent several months at Betatakin.

[c] Mr. Douglass has furnished the writer the following data from his report regarding the positions of the most important ruins in the Navaho National Monument:

	LATITUDE	LONGITUDE
Kitsiel	36° 45′ 33″ north.	110° 31′ 40″ west.
Betatakin	36° 40′ 57″ north.	110° 34′ 01″ west.
Inscription House	36° 40′ 14″ north.	110° 51′ 32″ west.

[d] One of these is designated Inscription House on Mr. Douglass's map (pl. 22).

[e] According to one Navaho the meaning of this word is "antelope drive," referring to the resemblance of the canyon to such a structure.

[f] For photographs of Kitsiel (pl. 1) and of Inscription House (here pl. 2), published by courtesy in advance of Mr. Douglass's report, the writer is indebted to the General Land Office. Acknowledgment is made to the same office for ground plans of Kitsiel and Betatakin, which were taken from Mr. Douglass's report.

a. INTERIOR

b. EXTERIOR

RUIN A, SOUTHWEST OF MARSH PASS

cylinders of clay shaped like a Vienna loaf of bread. These "bricks" consist of a bundle of twigs enveloped in red clay, which forms a superficial covering, the "brick" being flattened on two faces. These unusual adobes were laid like bricks, and so tenaciously were they held together by clay mortar that in one instance the corner of a room, on account of undermining, had fallen as a single mass. The use of straw-strengthened adobe blocks is unknown in the construction of other cliff-houses, although the author's investigations at Cliff Palace in Mesa Verde National Park revealed the use of cubical clay blocks not having the central core of twigs or sticks, and true adobes are found in the Chelly canyon and at Awatobi. The ruins in West canyon can be visited from either Bekishibito or Shanto, the approach from both of these places being not difficult. There is good drinking water in West canyon, where may be found also small areas of pasturage owned by a few Navaho who inhabit this region. The trail by which one descends from the rim of West canyon to the valley is steep and difficult.

One of the most interesting discoveries in West canyon is the grove of peach trees in the valley a short distance from the canyon wall. The existence of these trees indicates Spanish influence. Peach trees were introduced into the Hopi country and the Canyon de Chelly in historic times either by Spanish priests or by refugees from the Rio Grande pueblos. They were observed in the Chelly canyon by Simpson in 1850.

The geographical position of these ruins in relation to Navaho mountain[a] leads the writer to believe that they might have been built by the Snake clans in their migration south and west from Tokónabi to Wukóki, but he has not yet been able to identify them by Hopi traditions.

But little has appeared in print on the ruins near Marsh pass. In former times an old government road, now seldom used, ran through Marsh pass, and those who traveled over it had a good view of some of these ruins. Situated far from civilization, this region has attracted but slight attention, although it is one of the most important, archeologically speaking, in our Southwest. Much of this part of Arizona is covered with ruins, some of which, as "Tecolote,"[b] are indicated on the United States Engineers' map of 1877. In his excellent article[c] on this region Dr. T. Mitchell Prudden gives us no description of the interesting cliff-dwellings in or near Marsh pass, though he writes of the ruins in the neighboring canyon: "There are numerous small valley sites, several cliff houses, and a few picto-

[a] Hopi legends ascribe the former home of the Snake clan to the vicinity of this mountain.

[b] The Mexican Spanish name for the ground-owl, from Nahuatl *tecolotl*.

[c] In *American Anthropologist*, N. S., V, no. 2, 1903.

graphs in the canyon of the Towanache,[a] which enters Marsh pass from the northwest." As indicated on his map, Doctor Prudden's route did not pass the large ruins west and south of this canyon or those on the road to Red Lake and Tuba.

Manifestly, the purpose of a national monument is the preservation of important objects contained therein, and a primary object of archeological work should be to attract to it as many visitors and students as possible. As the country in which the Navaho National Monument is situated is one of the least known parts of Arizona, first place will be given to a brief account of one of the routes by which the important ruins included in the reserve may be reached.

ROUTES TO THE NAVAHO NATIONAL MONUMENT

Three routes to the Monument have been used by visitors, namely: (1) that from Bluff, Utah, by way of Oljato or Moonwater canyon; (2) that from Gallup, New Mexico, via the Chin Lee valley, and (3) that from Flagstaff, via Tuba and the Moenkopi wash. The disadvantages of the first route, that used by most visitors, are the isolation of Bluff from railroads, the treacherous character of the San Juan river, which must be crossed, and the rugged country near Marsh pass. From the Gallup road it would be possible to go through the Canyon de Chelly in full view of many of its greatest cliff-dwellings, and while facilities for outfitting and purchasing supplies along the route are not of the best, this route has its advantages.

Route from Flagstaff to Marsh Pass

The writer outfitted at Flagstaff, Arizona, and, following the "Tuba road," forded the Little Colorado at Tanners crossing, and continued on to Tuba, a Navaho Indian agency situated near the Moenkopi wash, where there is a trading place at which provisions can be had. The road from Flagstaff to Tuba is well traveled, its sole drawback being the ford of the river, the bottom of which at times is treacherous. Immediately after leaving Flagstaff this route passes through a pine forest, which offers many attractive camping places and where water can always be obtained. For the greater part of the distance Sunset and O'Leary peaks are in full view and the beautiful San Francisco mountains are likewise conspicuous. After crossing Deadmans flat the road descends to Indian Tanks, situated near the lower limit of the cedar trees; here is a fairly good camping place where water is generally available. From this camp to Halfway House[b] one crosses a semiarid desert, where wood and water are hard to find.

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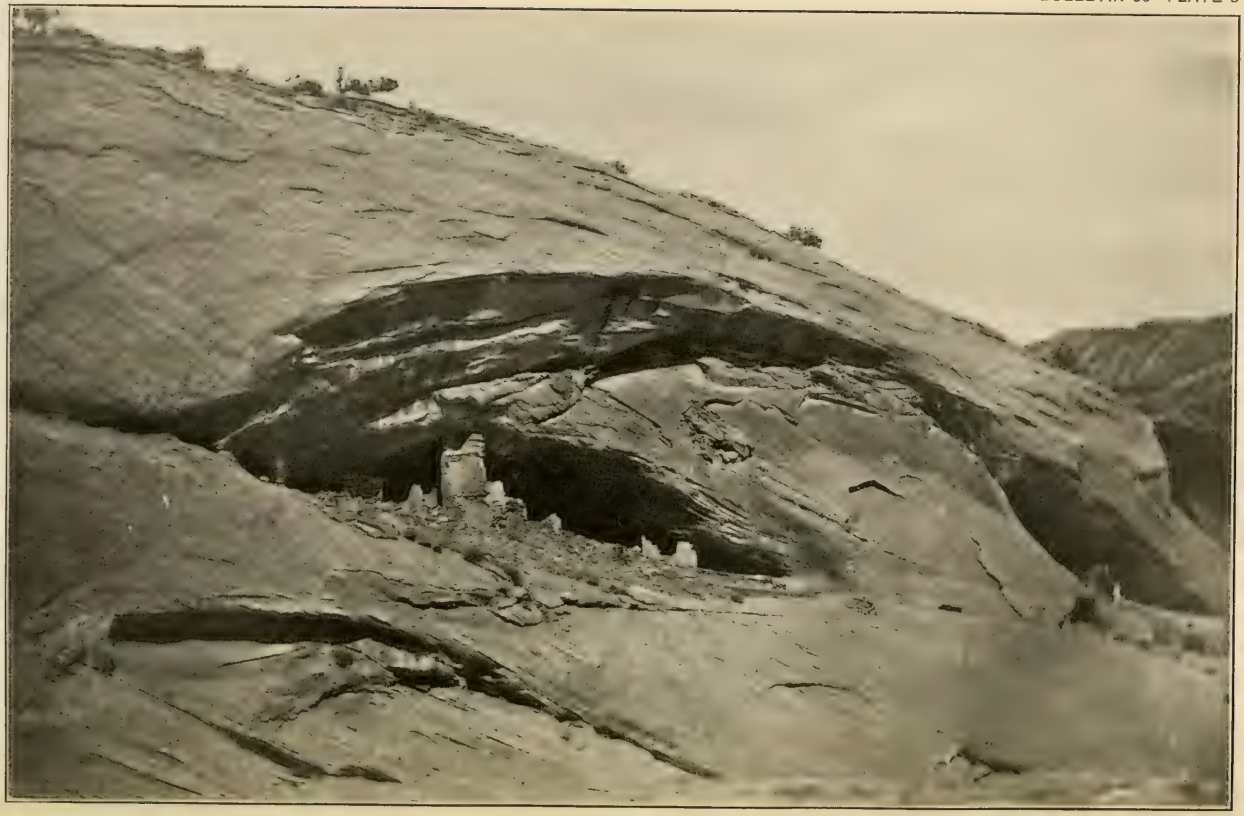
[a] The word *bokho* ("canyon") is applied by the Navaho to this canyon; *tségi* ("high rocks") is used to designate the cliffs that hem it in.

[b] A two-room stone house erected by the Indian Bureau for use of employes.



RUIN B AT MARSH PASS

One of the most interesting landmarks visible from the road, after leaving Indian Tanks, is called Superstition mountain, an elevation situated to the north. According to Navaho stories, phantom fires are sometimes seen on this mountain on dark nights, recalling an incident, mentioned in the Snake legend, which occurred when the Snake clans came south in their early migration from Tokónabi. This legend states that all this land once belonged to their Fire God, Masauû, who was likewise god of the surface of the earth. Lights moving around the mesas are said to have been seen by these ancient inhabitants much as they are now ascribed to Superstition mountain.

The traveler over the recent lava beds and cinder plains in the neighborhood of the San Francisco mountains can readily accept the statement that the early Hopi saw flames issuing from the earth or the glow of hot lava, which gave substance to the legend still preserved among this people. It was so natural for them to regard such a country as the property of their Fire God that their legends state they inherited the land from him.

The legends of the Snake clans recount also that when their ancestors migrated from Tokónabi they went south and west until they reached the Little Colorado river, where they built many houses of stone. They remained there several years, but later left these houses and continued in an easterly direction to Walpi. Where are the ruins of these ancient houses of the Snake clans on the Little Colorado? There are several Little Colorado ruins, as Homolobi near Winslow, but Hopi traditions affirm these were built by people who came from the south. Lower down the river at the Great Falls are other ruins, but these likewise are ascribed to southern clans. The cluster of stone buildings near the Black Falls conforms in position and direction from Walpi to Hopi legends of the site of Wukóki, the Great Houses built by Snake clans before they went to Walpi. In their migration from Tokónabi, probably the Snake people tarried here and built houses, and then went on to the Bear settlements or the Hopi pueblos, where their descendants now live. More extensive archeologic work on these ruins may shed additional light on this identification, and it is interesting to compare in point of architecture the buildings at Black Falls[a] with those of extreme northern Arizona.

[a] For plates representing ruins at Black Falls, see *Twenty-second Annual Report of the Bureau of American Ethnology*. Plate 3 (hitherto unpublished) of the present report represents one of the characteristic Black Falls ruins, which closely resembles several of the characteristic ruins standing on low hills near the road to Marsh pass, beyond Red Lake.

The architecture of the ruins on the Little Colorado near Black Falls resembles that of the open ruins, especially Ruin A, and those near the road from Bekishibito to Marsh pass. While great weight can not be given to this resemblance, since we find much uniformity in stone ruins everywhere in the Southwest, it is interesting to take in connection with this fact the close likeness in minor objects from the Laguna Creek ruins and the Black Falls cluster. The prevailing ware from both is the gray pottery with black geometrical ornamentation and red ware with black or brown decoration. The red ware and the yellow ware, so abundant higher up the river, are not the prevailing kinds. The pottery of the Black Falls ruins is essentially the same type as that of the San Juan and its tributaries.

An obscure trail branches from the Tuba road to the Black Falls ruins just beyond the cedars below Indian Tanks, and the black walls of the so-called "citadel" of this cluster are conspicuous for a considerable distance before one leaves the main road. The ruin here figured is some distance beyond the "citadel" and is hidden from view by intervening hills and mesas, but from the time the traveler crosses the valley of the Little Colorado and goes down into the Moenkopi wash he follows approximately the old trail the Snake people took in their southerly migration from Tokónabi.

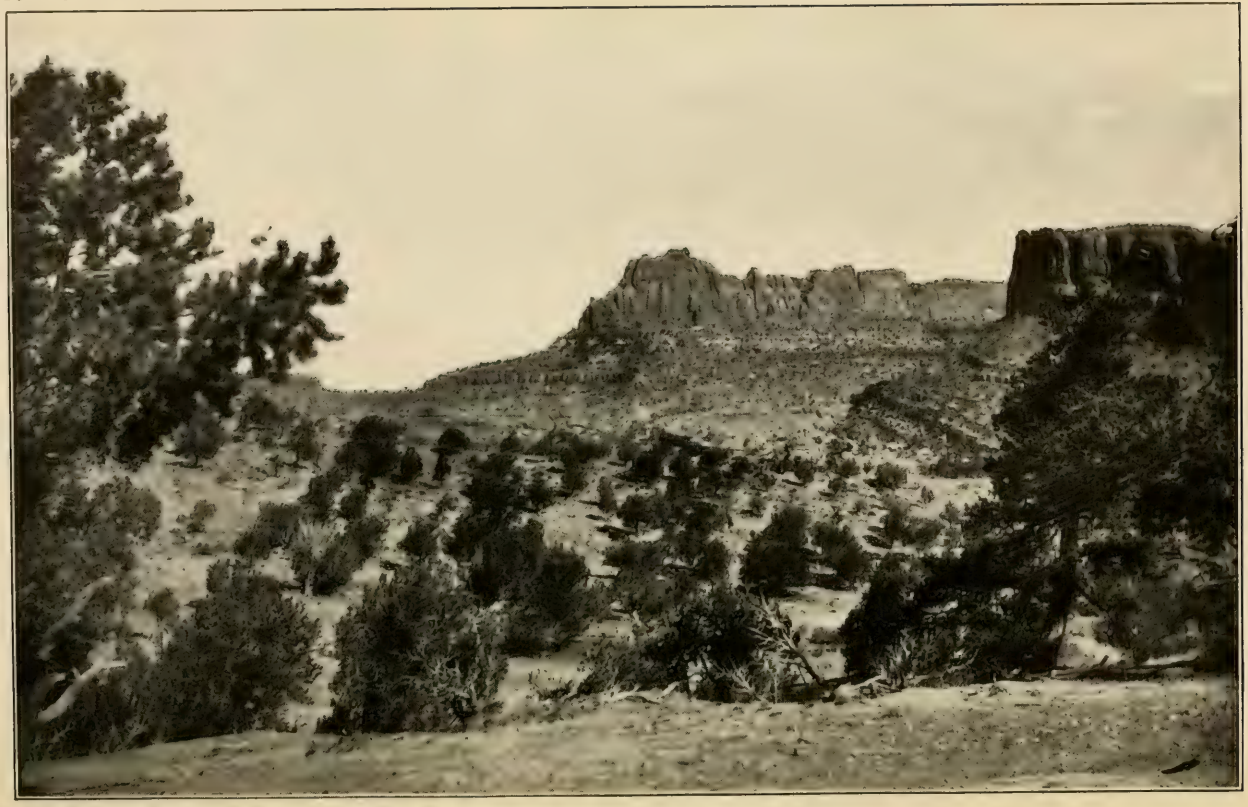
Near Tanners crossing on the left bank, a short distance down the river, Mr. Janus[a] has cemented a small basin above the highest level of the flood, into which always flows pure water. The road from the river to Moenkopi wash passes through a region where there is very little wood for camping and no water. The distance from Flagstaff to Tuba, about 90 miles, may be traveled in two days by taking the midday meal of the first day at Indian Tanks and camping the first night at Halfway House, where there is water for horses.

The pueblo settlement of Moenkopi ("place of the running water"), which lies not far from Tuba, will give the visitor a fair idea of a small Hopi pueblo. This settlement is said to be comparatively modern and to have been made by colonists from Oraibi, but there are reasons to believe that it dates back to the middle of the eighteenth century. The pueblo is inhabited mainly by Pakab (Reed) clans, a people of late advent in the Hopi country, whose arrival therein was subsequent, at all events, to that of the Snake clans. The houses of Moenkopi are arranged in rows, and it has one ceremonial room, or kiva, not unlike the kivas of Walpi. None of the great nine-days ceremonies of the Hopi is performed at Moenkopi; such dances as exist, called *katcinas*, are conducted by masked participants. Possibly the presence of Pakab clans in this pueblo is accounted for by need of warriors in its exposed position, for the chief of the Hopi Warrior society (at Walpi) belongs to the Pakab clan. The ruins about Moenkopi are small and inconspicuous, but those between this pueblo and Oraibi are of considerable size.

Beyond Tuba the road is rough, running over upturned strata of rocks and extending along sandy stretches of plain and hills to Red Lake, where there is an Indian trading store owned by well-known merchants of Flagstaff.[b] Here also provisions may be obtained for the trip and abundant water for stock. The road now becomes more difficult. Just after leaving Red Lake there may be noticed to the left two great pinnacles of rock called Elephant Legs, not unlike those in Monument canyon, Utah, and far to the north the cliffs are fantastically eroded. The White Mesa natural bridge, visible from Red

[a] Mr. Stephen Janus, agent of the Northwestern Navaho, to whom the author is indebted for many kindnesses, joined him at Tuba and made the trip to Marsh pass and the neighboring ruins with his party.

[b] The presence of excellent traders' stores at Tuba and Red Lake renders it unnecessary to carry groceries or fodder from Flagstaff.



VIEW INTO LAGUNA CANYON FROM MARSH PASS

Lake, is one of the scenic features of this locality. There are prehistoric burials in the sands near Red Lake, from which have been obtained several beautiful specimens of pottery resembling in the main those from the Navaho National Monument and from the Black Falls ruins.

The road continues from Red Lake to Bekishibito (Cow Spring),[a] where the water issues from under a low cliff, spreading in the wet season over the adjacent plain and forming a shallow lake several miles long, whose bottom is somewhat dangerous on account of quicksands. When there is water a rich mantle of grass—a boon to travelers in this dusty land—covers the plain, making an attractive camping place. This stretch of the road, not more than 20 miles in length, is fairly good and easily traversed by wagons.

After leaving Bekishibito, the road to Marsh pass, although on the whole not bad, becomes more and more obscure. The traveler now enters the region of ruins, and passes several mounds indicating former habitations, some of which still have standing walls. Several pools of water, reduced to little more than mudholes, are found along the road, but a constant supply of potable water is found at the sand hills in the Black mesa opposite the butte called by the Navaho Saunee, 30 to 40 miles distant from Cow Spring. The distance from Red Lake to this camp is a good day's journey with a heavily loaded buckboard, noon camp being made at Bekishibito. From Saunee one can easily reach Marsh pass in another day, making in all five "sleeps" from Flagstaff to Marsh pass. The only serious difficulties on the route are encountered as one ascends the pass, but a few weeks' work here would make the whole road from Tuba to Marsh pass as good as that from Flagstaff to Tuba, which is considered one of the best in this part of Arizona.

A large ruin with high walls is visible on a promontory of the Sethlagini plateau westward from this camp. This ruin, as well as another near the road, about halfway from the sand hills to Bekishibito, was not studied; the latter, which lies only a short distance from the road, on a low rocky hill, was visited and found to be the remains of a small pueblo, more or less dilapidated but with standing walls. The fragments of pottery in this vicinity are not unlike those found at the Black Falls ruins, and the masonry of the ruin is almost identical in character. At the time of the writer's visit there was a pool of water, not very inviting even to horses, a few hundred feet from this ancient habitation. Numerous sheep pasturing in the neighborhood befoul this pool, so that it can not be depended on to supply the needs of either men or horses. The road (plate 2) follows the valley west of the great Sethlagini mesa, over a hill and finally down again to a Navaho cornfield, the owner of which served as a guide to the large ruin A.

[a] Spanish: *vaca*, "cow"; Navaho: *shi*, "her"; *to*, "water".

MAJOR ANTIQUITIES

Ruin A

The first ruin of considerable size that was visited is situated to the left of and somewhat distant from the road, a few miles west and south of Marsh pass. As this ruin (pl. 4)[a] stands on an elevation, it is visible for a considerable distance across the valley, especially to one approaching it from the southwest. The standing walls rise in places to a height of 10 feet, showing indications of two stories, some of the rafters in places still projecting beyond the face of the wall. The two walls highest and most prominent are parallel, inclosing a long room or court; in one place a break has been made through these walls, as appears in the illustration. The remnants or foundations of other walls back of these show that ruin A was formerly very much larger than the walls now standing would indicate.

The walls are composed of roughly laid masonry, bearing evidences on the inside of adobe plastering. An exceptional feature is the large number of the component stones decorated on their outer faces with deeply incised geometrical figures, apparently traced with some pointed implement.[b]

Comparison of the architecture of this ruin with that of the Black Falls ruin here figured (pl. 3) shows a resemblance which is more than superficial, in the elevated site, character of the masonry, and general ground plan; and comparison of its walls with those of Old Walpi shows a similar likeness, which is instructive so far as it goes. This is the only large ruin visited that is characterized by high standing walls on top of an eminence, but Navaho guides said they were familiar with others in this neighborhood similar in structure and situation.

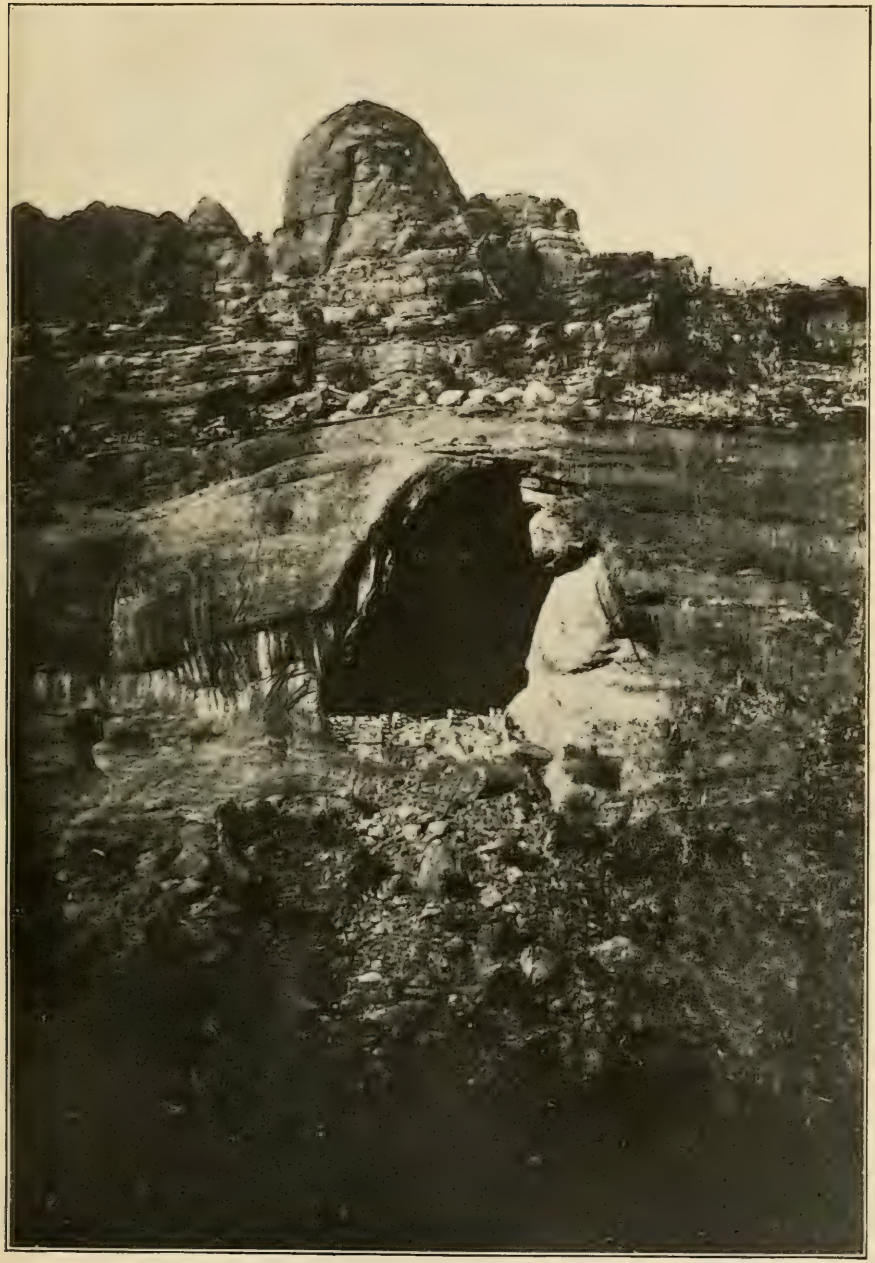
Immediately after leaving this ruin the attention is drawn to the first of the large cliff-dwellings, cliff-house B, situated near Marsh pass. The contrast in color of the Cretaceous rocks on the right and the Triassic formations on the left side of the pass is noticeable for some distance. The great cliff-dwellings are found high up in the red sandstone on the left.

Cliff-House B

This picturesque ruin occupies the whole floor of a narrow, low cave situated in an almost vertical cliff forming one side of a canyon which extends deep into the mountain; the entrance is between low hills on the left, where the road ascends to Marsh pass. The

[a] This ruin may be that called Tecolote, which appears on many old maps.

[b] Among other names cut on the walls of this ruin is that of Lieutenant Bell, 1859.



SWALLOWS NEST

ruin can be seen for a long distance, but as one approaches the canyon in which it lies the site is hidden by foothills. The accompanying view (pl. 5) was taken from the opposite side of the canyon, it being impossible to get an extended detailed view of the ruin from above or below. Beyond the ruin the canyon forms a narrowing fissure with precipitous sides; its bed is covered with bushes, stunted trees, and fallen rocks. No flowing water was found in this canyon, but in the ledges near its mouth, below the ruins, there are pockets and potholes which contained considerable water at the time of the writer's visit.

This cliff-dwelling is difficult to enter, the walls of the canyon, both above and below and on the sides, being almost perpendicular. A pathway extending along the side of the cliff on the level of the cave approaches within 20 feet of the ruin; from its end to the first room of the ruin this trail is continued by a series of footholes pecked in the rock, making entrance hazardous at this point.[a] Although the walls of this cliff-dwelling are more or less destroyed and their foundations deeply buried, there still remains standing masonry of a square tower (?) reaching from the floor to the roof of the cave. One corner of this tower is completely broken out, but the remaining sides show that this building was three stories high, composed of rooms one above another.

Several other rooms lie concealed under fallen walls and débris. One of the most instructive of these is what may have been a *kiva*, or ceremonial room,[b] the location of its walls being indicated by stakes projecting out of the ground. Lower down, where the wall was better preserved, sticks or wickerwork were found interwoven in the uprights, the whole being plastered with adobe, a form of wall construction common in prehistoric ruins of Arizona.

In comparison with the Mesa Verde ruins, the masonry of this ruin is poor, but the stones used in constructing the walls are large. The many fragments of pottery strewn over the surface of the floor of the cave resemble in symbolism pottery from Black Falls, the same colors, black and white, predominating.[c]

In descending the declivity of the cliff in the sides of which cliff-house B is situated, there comes to view a cluster of broken walls crowning a low elevation, which indicate a former house of some size. In their neighborhood are the foundations of other walls, and the ground in the vicinity is strewn with many fragments of pottery and much fallen masonry half buried in débris. Farther down the hill,

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[a] A few broken-down walls of rooms stand at the side of the trail just before one reaches the dangerous part.

[b] No other rooms that could be called ceremonial were recognized in cliff-house B, but the writer's examination of the ruin was not very thorough and their existence may have escaped him.

[c] Mr. Black informs me that it was in this ruin that he found the beautiful woven belt now at El Tovar Hotel, Grand Canyon.

on the level of the road and extending parallel with it, are low ridges or mounds covered with pottery, indicating the former presence of a pueblo of considerable size. No walls were traced in these mounds, which seem to indicate the existence of an ancient cemetery, as several rings of small stones, suggesting graves, were found. A short distance beyond this supposed cemetery is a little cave, situated a few hundred feet to the left of the road. In this cave are a few walls, but the cliff-dwelling is not of great size; beyond it the road rises steeply to Marsh pass. (Pl. 6.)

Although some of the ruins in the Navaho Monument may be visited without the use of saddle horses, the largest can not now be approached with wagons. It would be possible at a small expense, however, so to improve the Indian trail up the canyon of Laguna creek that one could drive within a fraction of a mile of the great ruins, Betatakin and Kitsiel. At present, to reach these one must leave carriages at Marsh pass and descend with saddle horses to the bed of Laguna creek, which flows along the canyon, in the side branches of which are situated the greatest two cliff-dwellings of the region. One of these, Betatakin, is about six miles, the other, Kitsiel, about 10 miles, from Marsh pass.

Swallows Nest

Descending to Laguna creek and following the bottom of the canyon, crossing and recrossing the stream several times, the first cliff-dwelling is seen built in a niche in the cliffs high up on the right. This ruin seems to fill the bottom of a symmetrically vaulted, open cave, the high arched roof and sides of which are so eroded that from one point of view the shadow cast by the ruin at certain times outlines the profile of a head and part of a human body, as seen in plate 7. Although a talus[a] extends from this ruin some distance down the cliff, rendering access difficult, the ruin was entered, but found to be in a poor state of preservation. Several of the walls, viewed from the road, appeared to be in good condition, and some of the rooms are more than one story high.

Betatakin

Following the canyon about five miles from Marsh pass, the writer's party came to a fork in the canyon,[b] where a guide was found who led the way across the stream into a small side canyon, in the end of which lies Betatakin. This canyon is wooded and at the time of the writer's visit contained plenty of water, a small stream

[a] Rooms are concealed by this talus, the walls of which project in places out of the ground.

[b] Laguna creek is entered at this point on the right by a stream bifurcating into the Cataract and East tributaries, which flow through canyons of the same names. In or near East canyon are four large ruins: Ladder House, Cradle House, Forest-glen House, and Pine-tree House. The largest ruin in Cataract canyon is Kitsiel. The Navaho sometimes speak of the East canyon as the Salt, or Alkaline, *bokho*.

BETATAKIN—GENERAL VIEW

issuing from almost under the walls and trickling down through the bushes over a mass of fallen rock which forms the talus. The climb to the ruin from the place where horses must be abandoned is not a hard one and a trail could easily be made; in fact a carriage road might be constructed at small expense from Marsh pass to within half a mile of this great ruin, one of the largest two and best preserved cliff-dwellings in the Navaho National Monument.

A feature of this ruin (plates 8–11) which attracts attention on entering it is the fine echo, due to the shape of the open cave in which it lies. Were the name not preempted, it would seem that Echo House would be a much more appropriate designation for the ruin than Betatakin, "High-ledges House," applied to it by the Navaho.

Certain differences in architectural features between cliff-houses in the Mesa Verde region and those here considered are apparent. The caves in which the cliff-dwellings of the Navaho Monument region are situated differ in geological formation from those of the Mesa Verde National Park. While in the former there are many instances of horizontal cleavage planes, as a rule the falling of blocks of stone has left vertical flat faces. On this account the caves are shallow and high-vaulted rather than extending deep into the cliff. The process of formation of these vertical planes of cleavage is shown by examining plate 9; in this case a pinnacle of rock has begun to break away and is partially separated from the surface of the cliff. This pinnacle will ultimately topple over and fall as many have done before, leaving a broken stump at its former base. In this way, from time to time, in the past geological history of the cave, detached pinnacles and slabs of rock have broken away along these vertical planes of cleavage, leaving the tops of their broken bases later to become foundations for rooms. Similar flat vertical planes of cleavage are rare, almost unknown, in the Mesa Verde caves. Here the cleavage is horizontal, the caves extending deep into the cliffs.[a]

The modifications in architecture brought about by the difference in direction of these cleavage planes are apparent. The ancient builders in the Navaho Monument region utilized the vertical faces as supports for walls of rooms on one or more sides. In some cases the face of the cliff forms the rear walls; in others a side wall and the rear wall of a room are formed by vertical cleavage planes at right angles, as shown in plate 9. It can be seen that adjacent houses built upon fallen rocks of different heights, the vertical faces being utilized as rear walls, would seem to stand one above another, or, in other words, they would present the well-known terrace form which exists in some modern pueblos.

[a] Another geological feature of the sites of the large cliff-dwellings of the Navaho Monument is the almost constant presence of a vertical cliff-wall below the cave floor, the talus rarely extending to the base of the lowest rooms.

The writer approached this ruin by following the fallen débris at the end, where the rooms, being without covering and exposed to the elements, are most dilapidated. Over this fallen mass one makes his way with difficulty and is often in danger of falling from the cliff. On account of the perpendicular face of the cliff below the foundations of the other end of the ruin, it is impossible to climb into it, except from this side. On approaching the ruin there is to be seen on the vertical face of the cliff a pictograph (pl. 12) worthy of special mention, or rather two pictographs which are doubtless connected in meaning. The larger of these is a circle, painted white, resembling a shield (a common object in pictographic representation), the other a horned animal, perhaps a mountain sheep.[a] The figure on the shield, which bears evidence of former coloration, represents a human being with outstretched arms, the hands being raised to the level of the head. On each side of the body are represented two designs—a circle of yellow and a crescent in which are parallel bands of red, yellow, and probably green.

The rooms in this cliff-house are rectangular, cubical, or box-like structures built against the face of the cliff, which serves as their rear wall. There are no towers or round rooms such as those that lend picturesqueness to several of the Mesa Verde cliff-dwellings. Few of the rooms are more than two stories high, the appearance of terraced rooms being given by the varying heights of their foundations. The masonry is crude, the lines are irregular, and the external faces of the walls vertical. The interior wall was probably plastered, and some walls afford good evidence that their exterior was formerly covered with mud.

A marked feature of ruins in this region is the adobe walls supported by rows of stakes with interwoven sticks. No adobe bricks were seen in the walls examined.[b]

One of the largest clusters of rooms in this cliff-house (Betatakin) stands on a huge rock foundation, the vertical face of which is continuous with the wall of masonry of the front building of the cluster. (Pl. 11.) The rear wall of the front room is formed by the vertical face of the cliff. About half of the roof of this room has gone, but several patches still remain even in the broken section. The rooms of the higher tier are set against an upright wall. The doorway is on one side. The shelf of rock on which this room stands is level with

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[a] According to Hopi legends, the Horn clans (animals with horns) are kin to the Snake, and formerly lived with the Snake clans at Tokónabi. Later they united with the Flute clans at Lengyanobi, and still later joined the Snake clans at Walpi. Lengyanobi ("Pueblo of the Flute") is a large ruin north of the Hopi mesas.

[b] "Adobe bricks" with straw, according to Mr. W. B. Douglass, are found at Inscription House near the end of the White mesa. The writer has found adobe cubes in some of the walls of Cliff Palace, but these contain no straw.

BETATAKIN—WESTERN END

GALLERY WALL
LINE OF GALLERY LEDGE
STEPS
BENCH
BENCH
COURT
ROOM ON LEDGE
1
2
3
4
5-6
7
8
9
10
11
12
13
14
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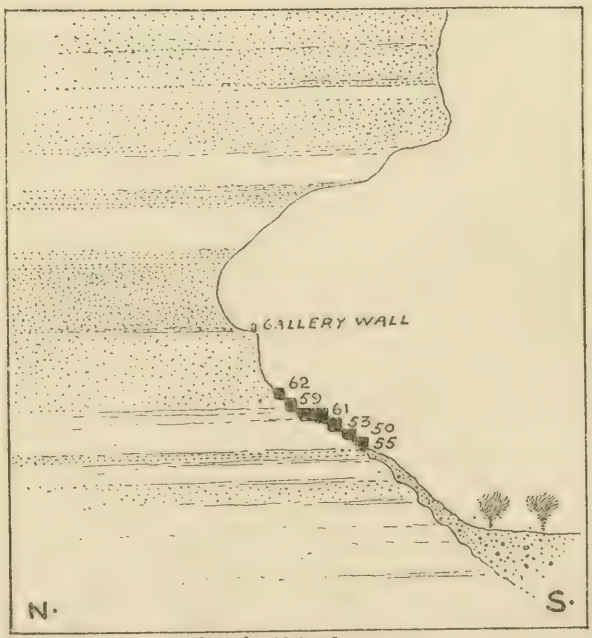
GALLERY WALL
62
59
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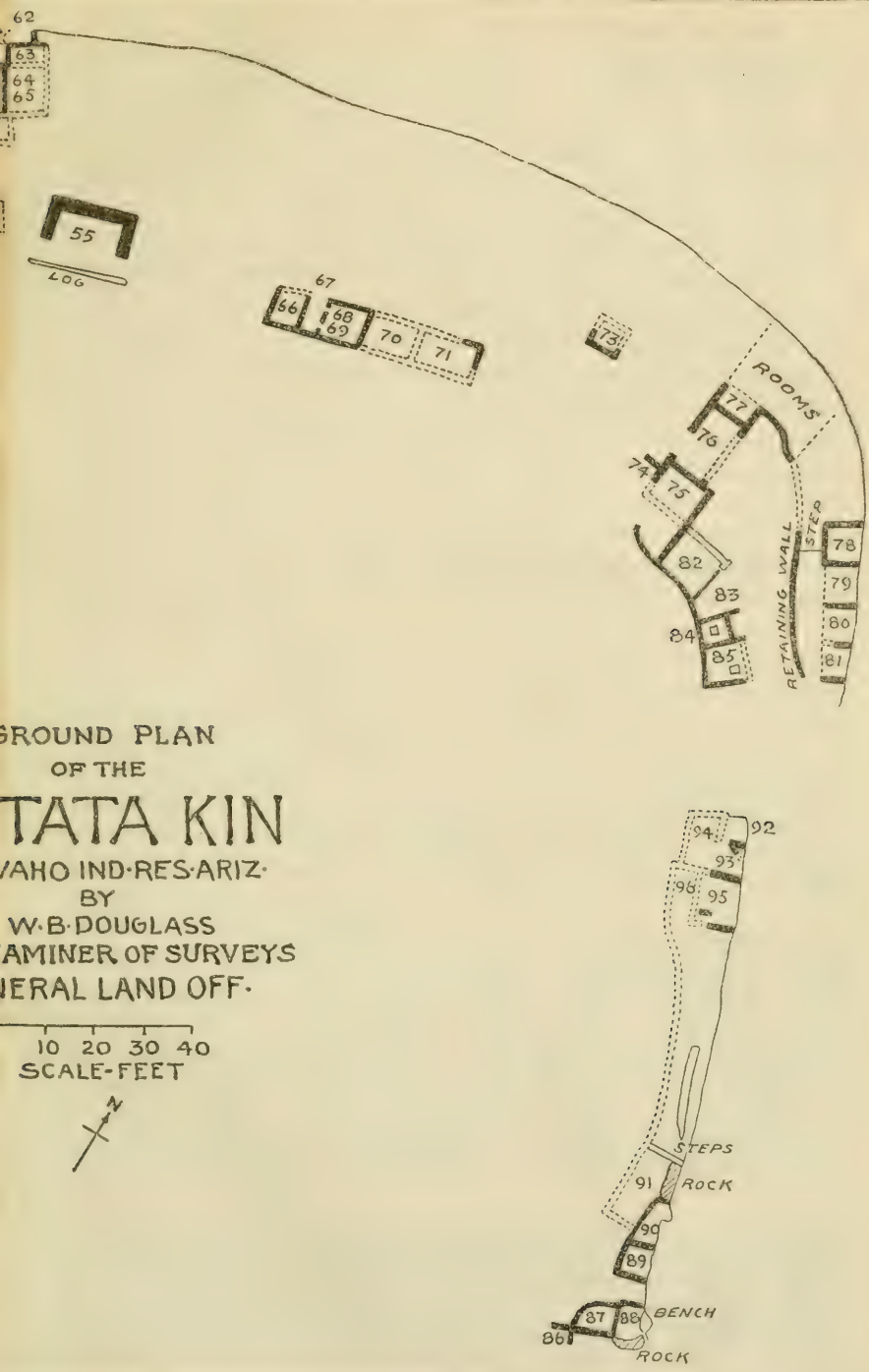
S.

SECTION



GROUND PLAN
OF THE
TATA KIN
VAHO IND·RES·ARIZ·
BY
W·B·DOUGLASS
AMINER OF SURVEYS
NERAL LAND OFF·

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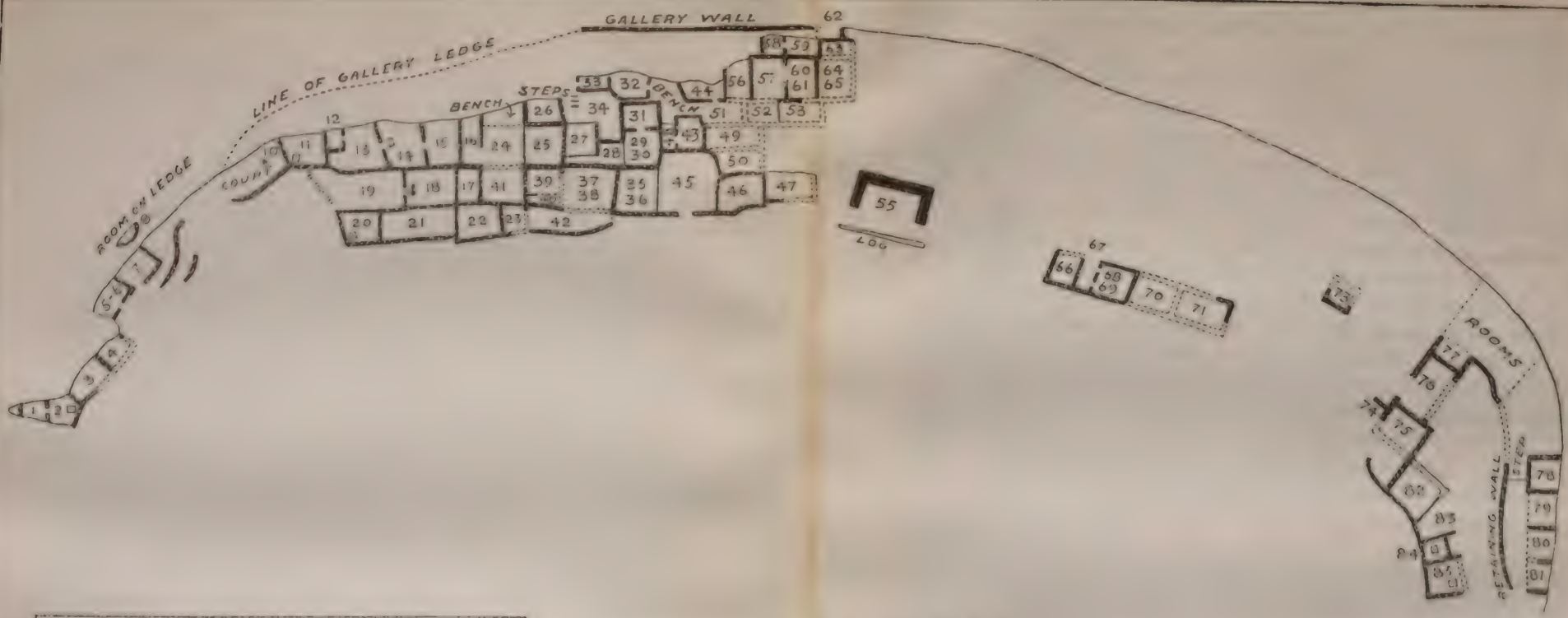
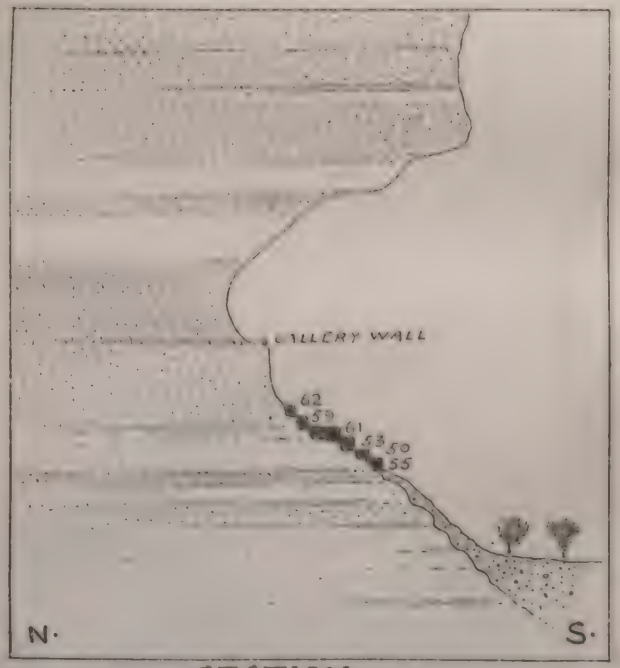
SCALE-FEET





SECTION

GROUND PLAN
OF THE
BETATA KIN
NAVAHO IND·RES·ARIZ·
BY
W·B·DOUGLASS
U·S·EXAMINER OF SURVEYS
·GENERAL LAND OFF·

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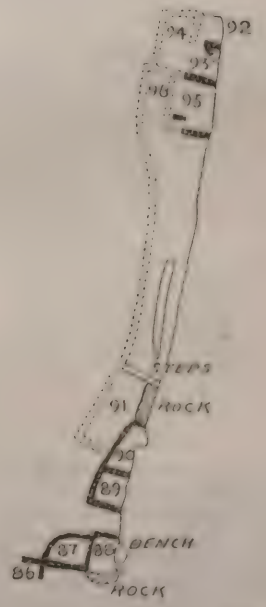
SCALE-FEET



the roof of the first room and the cave wall forms its rear. This room was probably a ceremonial chamber, having a fire-hole in the floor, between which and the doorway is a low wall of masonry corresponding to the deflector, or altar, in Mesa Verde ruins.[a] The part of the floor on which one steps in entering this room is raised slightly above the remainder, serving to connect the base of the deflector with the doorsill. The deflector and fire-hole are practically duplicates of features common to several Cliff Palace kivas. At Betatakin, however, the ceremonial room is above ground, not subterranean, and is entered from the side instead of from the top.

A two-story room stands on the rock one tier higher than the ceremonial room just mentioned, its foundation being at the level of the roof of the ceremonial room, as shown in the illustration. The front wall of this room is more or less broken down, but on one side, where projecting rafters are found in place, the masonry, otherwise unbroken, is pierced by a small window. This room has also a door on the side. Several well-preserved rooms extend along a ledge of rock on the same level as the roofs of these buildings, forming another tier above the ceremonial room. One of these has a fine roof; ends of rafters extend from the walls.

Beyond the ceremonial room, on the side where the ruin is most dilapidated, may be noted the same arrangement of the rooms in tiers or terraces, brought about by the varying height of their foundations. Several walls in these rooms are in good condition, but the fronts of many are broken down. Here are found rows of sticks or supports projecting from the débris. The walls are almost invariably of stone; those supported by sticks are usually connecting walls. The roofs of some of these rooms are entire, but many are broken, although their rafters still remain in place.

The whole length of Betatakin is not far from 600 feet, following the foundations from one end to the other. There are not far from 100 rooms visible, and evidences of others covered with débris. The larger of the two rooms identified as ceremonial rooms on account of their deflectors, measures 10 by 7 feet and is about 5 feet high; the smaller is about 7 feet square. There are no vertical ventilators as in circular kivas, the smoke evidently finding egress through a small hole in the roof. The floor of one of these ceremonial rooms was cut in the solid rock.

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[a] Although circular kivas are found in several ruins in the Navaho National Monument, as Kitsiel, Inscription House, Scaffold House, and others, they were not seen in Betatakin, which has the rectangular ceremonial room with side entrance above mentioned. Although such rooms possess some of the features of kivas, it is perhaps better to restrict that term to the circular chambers and adopt the word *kihu* to designate the rectangular rooms above ground. The ceremonial chambers of Betatakin suggest the Flute room at Walpi. This fact and the discovery of a flute in one of the rooms make it appear that Betatakin was inhabited by Flute clans, which, according to Hopi legends, lived in this region.

As above mentioned, there are no circular rooms or towers in Betatakin, although one room has a rounded corner. Traces of the repair of doors and windows are evident, but none of these apertures are T-shaped.

One of the interesting features in Betatakin and several other ruins in this region consists in rows of eyelets cut in the rocky side of the cliff evidently for the attachment of some long object.

A cluster of small rooms isolated from those above described are shown in plate 9; these give a good idea of the general type of architecture of these buildings and of the modifications or adaptations due to the sites on which they are erected and the vertical cliffs against which they are built. Three rooms set into the angle formed by two vertical cliff faces at right angles to each other illustrate how the cliff serves for rear walls and how the buildings are attached to it for support. The roofs of these rooms are entire and their rafters project beyond the upright walls. The doors and windows are, comparatively speaking, small and rectangular in form. Fragments of walls projecting out of the ground indicate the existence of many rooms covered with débris. These are especially numerous at the end of the ruin to which the trail leads, but as most of them are buried an adequate idea of their arrangement can not be gained without systematic excavation.

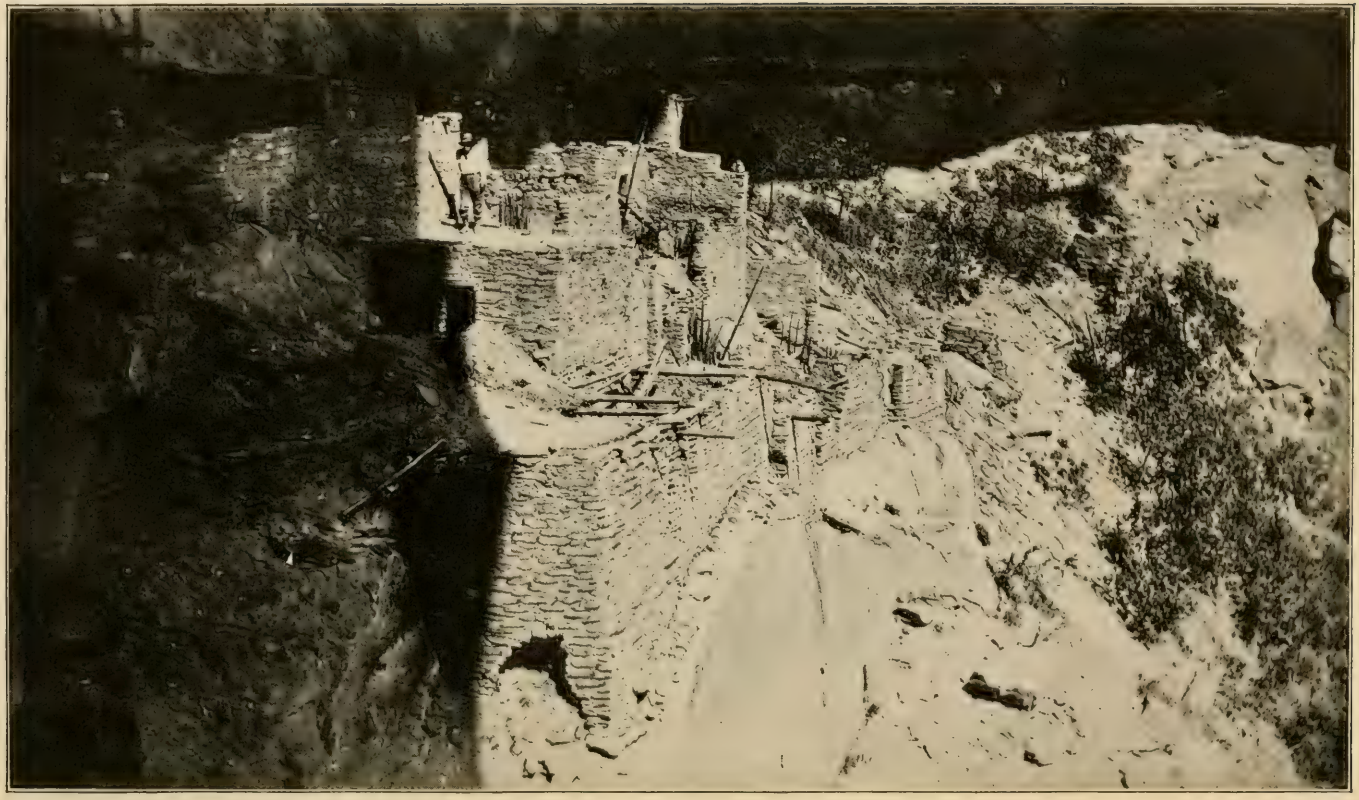
Kitsiel (Keet Seel)

This ruin, which lies about 10 miles from Marsh pass, is a most interesting cliff-dwelling.[a] As this is the best preserved of all the ruins thus far discovered in the Navaho National Monument, it should be excavated and repaired for future visitors and students. Kitsiel is a large ruin, its length (estimated at 300 feet) being not less than that of the greatest cliff-dwelling of the Mesa Verde National Park. Like other ruins in the vicinity, it is not so picturesque as the structures of that region, lacking round towers and other features so attractive in Cliff Palace.[b] The accompanying illustration (pl. 13) presents the ground plan of this ruin, the architectural features of which are similar to those of Betatakin.

One of the most striking features of Kitsiel is the great log, 35 feet long, under which the visitor passes to inspect the interior of the ruin. West of this log, which evidently once supported a retaining wall, the rooms are well preserved; east of it this wall in places has slipped

[a] For the accompanying view of the ruin (pl. 1), from photographs taken by Mr. William B. Douglass, the writer is indebted to the General Land Office.

[b] The kivas appear to be circular; one of them has the large banquette, like kiva M in Cliff Palace. No. pilasters for supporting roofs have yet been reported.



BETATAKIN—CENTRAL PART

down the cliff and its component stones are to be found in the talus below.

It is difficult to discover how many rooms this great cliff-house formerly had, but there is little doubt that they numbered more than 150, besides the kivas. This ruin is believed to be one of the largest known cliff-dwellings of the Southwest, ranking in size the Cliff Palace in the Mesa Verde, which it does not rival, however, in variety of architectural features. The masonry in Kitsiel is inferior to that in the Spruce-tree House and the Balcony House, the walls of which show the highest aboriginal achievement in stonework north of Mexico.[a]

The walled inclosures of Kitsiel are reducible to a few types of which the following may be distinguished:

(1) Kivas, or circular subterranean rooms with a large banquette on one side, the walls being generally broken down and without pilasters or roof-supports.

(2) Kihus, or rectangular rooms with doors on one side, each having a low bank, or "deflector," rising from the floor between the doorway and the fire-hole. Instead of this bank being free from the wall, as at Betatakin, it is generally joined to it on one side, the floor at the point of junction being raised slightly above the remaining level. Smoke-holes are sometimes, but not always, present in the roof. These rooms, like the circular rooms, are ceremonial in character. The only opening in their floors that can be compared with the ceremonial aperture, or *sipapu*, is a shallow depression a few inches deep. The diameters of these openings are greater than in the case of the sipapus in Cliff Palace kivas.

(3) Rectangular rooms, some of which have benches and show evidence of having been living rooms.

(4) Large rooms each with a fireplace in the middle of the floor.

(5) Rooms with metates set in bins made of stone slabs (milling rooms).

(6) Courts and streets. The longest street extends from the middle of the ruin to the western end and is lined on both sides by rooms many of the roofs of which are still intact.

An instructive architectural feature of some of the rooms of this ruin is the use of upright logs in supporting corners. Part of the roof of one of these rooms situated deep in the cave is formed by the natural rock and the remainder by an artificial covering supported by upright logs forked at the end to receive the rafters.

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[a] The two ruins Kitsiel and Betatakin are those about which extravagant statements as to size and character were made about two years ago by newspapers and otherwise reliable magazines.

Scaffold House

This ruin, about 2 miles from the place where two large canyons open into Laguna creek, lies in a cavern worn in the side of a large butte on the left of the stream. It is appropriately called Scaffold House from a finely made wooden scaffold (fig. 1) which the ancients constructed in a vertical cleft in the cliff about 50 feet above the east end of the ruin. Although this scaffold is now inaccessible from the walls of the room below, all the beams and much of the earthen floor still remain.

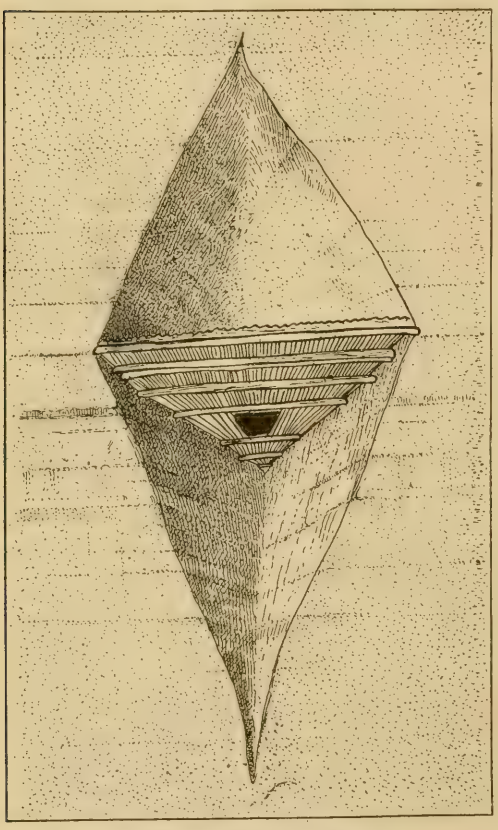

Fig. 1. Scaffold of Scaffold House.

The construction of the scaffold is as follows: The crevice in which it lies is rectangular, with the longest axis vertical. Several large logs placed horizontally, their ends fitted into holes pecked in the sides of the crevice, support smaller beams laid across them at right angles. These latter in turn are covered with small sticks on which are laid bark and clay, leaving a hatchway at a point about midway. The construction of this scaffold, probably as daring a piece of aerial building as can be found anywhere among cliff-dwellings, is so well preserved that it shows no sign of deterioration. We can only conjecture what its use may have been, but the plausible suggestion has been made that it was an outlook or place of defense.

Scaffold House is about 300 feet long. The rooms, which are in fine condition, extend along the side of the cliff, those situated midway of the length of the ruin being fairly well preserved. There are not far from 56 rooms still to be traced, and at least two circular kivas, the walls of one of which are still in fair condition. The larger kiva measures about 15 feet in diameter; it is subterranean, with a deep bench or banquette on one side. There is no trace of the pilasters

PICTOGRAPHS AT BETATAKIN

so conspicuous in the circular kivas of the Mesa Verde. The inner walls are smoothly plastered.

Enough of the roof of this kiva remains to show the method of construction, and as this is the first example of such a roof the writer has ever examined a brief description of it may prove to be instructive. (See pl. 14.) The supports or rafters are three in number, consisting of a large middle log laid across the center of the kiva halfway between the banquette and the opposite side, and of two smaller logs, parallel with it, resting on the top of the kiva wall, one across the banquette, and the other at about an equal distance on the opposite side. A number of smaller transverse beams, parallel with one another, are supported by the three logs already mentioned, and upon these lie the layers of sticks, bark, and adobe which cover the roof. No hatchway or place for a vertical opening was to be seen, but as the covering of the banquette is missing it is quite possible that the entrance to the kiva may have had some connection with this feature.

The top of a vertical stone slab, comparable in shape and position with a deflector, was seen projecting out of the débris that fills the lower part of the kiva, and rods in the wall near the roof represent pegs found at the tops of the pilasters in Mesa Verde kivas. There is a niche at one side for small objects, a constant feature in all kivas, circular and rectangular. The fire-hole was covered with débris.

The second circular kiva, which belongs to the same subtype, is situated not far from the one described, but is much more dilapidated, about half its walls having fallen. The roof of this kiva appears to have been supported in part by upright logs isolated from the walls, inside the chamber, three of which still stand in their original positions. This feature reminds one of kivas of the Rio Grande region as described by Castañeda, the historian of the Coronado expedition in 1540–42. In addition to the two circular kivas Scaffold House contains another room that may have been ceremonial in character, having all the essentials of the Betatakin rooms herein referred to as kivas. It lies near the western end of the ruin, its northwestern wall being bound by the vertical cliff. This room is rectangular, with a lateral entrance opposite which is a low bank, or deflector; the floor between the latter and the doorway is raised slightly above the general level. The fire-hole occupies a position on the other side, as in rooms of this kind in Betatakin. It was noticed that the sides of the doorway are considerably worn and that its lintel is made of split sticks.

In addition to the two circular subterranean kivas at Scaffold House there is at least one kihu in this ruin. This is situated near the western end, being built against the upright or rear wall of the cavern to which the two side walls are joined. The doorway is like those of the

kilns in Betatakin and is situated opposite the cliff-wall. The roof has fallen in, but the beams and wattling remain in place as they fell. There is a fire-hole in the middle of the floor, and between it and the doorway is a deflector made of upright staves between which is adobe work; the whole is plastered with adobe. The threshold of the low doorway is slightly elevated above the floor, and between it and the base of the deflector is a raised platform. The lintels are made of sticks split with wedges, possibly of stone, as shown by their fibrous surfaces.

There are many pictographs on the cliff at Scaffold House, the most conspicuous of which represent human hands, snakes (one of them is 15 feet long), mountain sheep or other horned mammals, and nondescript figures representing tailed human beings.

The ruins at Bubbling Spring, a short distance from Scaffold House, are inconspicuous.

Cradle House

This large ruin,[a] so named from the finding of the cradle described and illustrated herein, is situated in the side of a bluff rising above East canyon. It contains about 50 rooms and at least 3 circular kivas without pilasters, the front walls of which are considerably broken down.

The rooms of Cradle House as a rule extend along the rear of the cave, their back walls generally being formed by the vertical wall of the cliff, there being no recess behind them. The majority of the rooms lie about midway in the length of the ruin, the kivas being situated in front of the cluster. In two or three places rooms are found on levels below or above that of the main cluster, but only rarely are there rooms in front of others on the same level. On the upper ledge near the western end a small bin is found at the base of which is a considerable depression, probably artificial.

Ladder House

The more or less dilapidated walls of this ruin are to be seen from the left bank of East canyon, a few miles farther upstream. The position is indicated by an enormous butte which projects into the canyon and diverts the stream at that point. One side of this butte is eroded in such a way as to resemble in outline an elephant's trunk, this erosion marking the initial process in the formation of a "natural bridge." On the opposite side of this butte there is another large cliff-dwelling, which was not visited.

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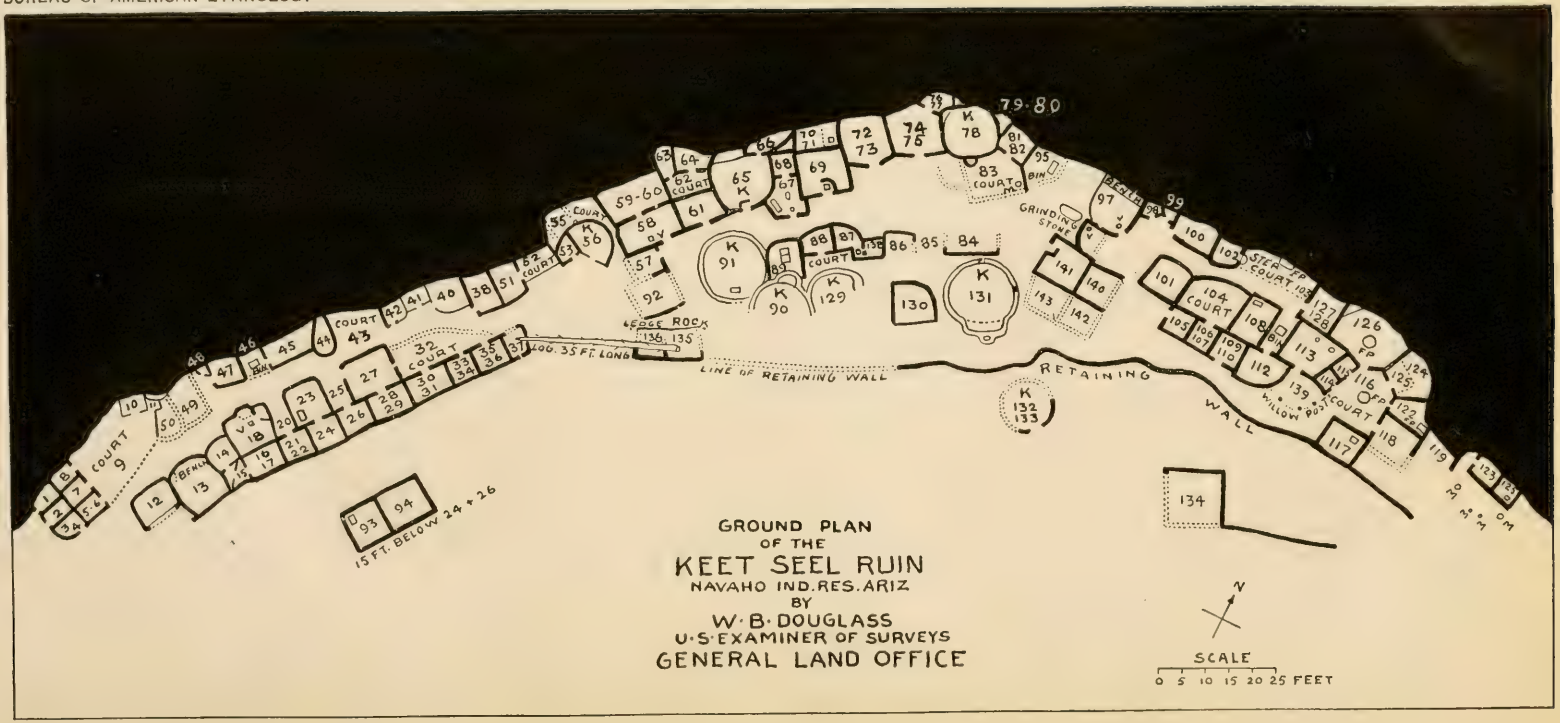
[a] Like all ruins in East canyon, Cradle House is situated in a small side canyon on the left bank.


GROUND PLAN
OF THE
KEET SEEL RUIN
NAVAHO IND. RES. ARIZ
BY
W. B. DOUGLASS
U. S. EXAMINER OF SURVEYS
GENERAL LAND OFFICE
SCALE
0 5 10 15 20 25 FEET
RETAINING WALL
LINE OF RETAINING WALL
EDGE ROCK
GRINDING STONE
WILLOW
COURT
BIN
FP
15 FT. BELOW 24 + 26
134

Forest-glen House

The fine growth of trees at the base of a large cliff-house about 2 miles beyond Cradle House has suggested the name Forest-glen House. Some of the walls are in the form of concentric semicircles with the conspicuous representation of a head attached to one side. Many rocks have fallen on this ruin from the cave roof, especially at one end, but the rooms at the western end are still well preserved.

Pine-tree House

About 8 miles up East canyon there is a large, almost inaccessible, ruin, which lies a short distance from the main canyon. A striking feature of this ruin is its division into three parts, of which the central section is somewhat lower than the one on each side. A large pine on the edge of the cliff above has suggested the name Pine-tree House. Deep below this ruin is a large basin, in which grow many trees and bushes; among these are a good spring and a small rivulet. This ruin has two very large circular kivas, without pedestals, 20 to 30 feet in diameter. A deep banquette is present on one side. This ruin exhibits no evidence of having been dug.

Trickling-spring House

After descending to Laguna creek from Marsh pass, crossing the stream, and following the bank about 2 miles, one comes to a ridge of copper-bearing rocks, beyond which the road crosses a deep ravine. On following the right bank this ravine is found to extend into the cliffs as a canyon. A few miles after entering the canyon a stream is encountered emerging from a spring and trickling over a cliff. High above this cliff, in a canyon 60 or 80 feet in size, the entrance to which is surrounded and more or less concealed by stately pines, spruces, and cedars, stands a cliff-ruin, possibly never before visited by white men, for which the name Trickling-spring House is suggested. Although this ruin is small, it is in several respects unique. The main architectural feature is a diminutive court or plaza, into which open a number of small rooms, having well-plastered walls and low entrances. In this, as in most of the other ruins in the Navaho National Monument, some of the house-walls are constructed of stone; but many are made of clay, plastered on sticks or wickerwork supported by upright logs. The masonry when present is poor as a rule, the component stones rarely being dressed into shape, but the surface plastering, especially on the kiva walls, is good. Many walls stand on rocks that have evidently fallen from the roof of the cave. A metate

set in position in one of the smaller rooms indicates that this particular inclosure served as a milling room.

Two squarish rooms, with lateral doorways and a deflector or wall before them, are identified as kihus. One of these has a platform or floor connecting the base of the ventilator and the doorway. The deflector is free from the kihu walls at both ends. The walls of a room with a deflector which opens into the plaza are very much blackened with smoke. No circular subterranean room was observed. There are several well-preserved hatchways in the roofs, showing that entrances of this kind were common in addition to lateral entrances with well-preserved sills and lintels. One or two of the small windows in the outer walls have a downward slant, as if to afford a better view of visitors approaching from below. One of these old doorways was closed with masonry, constructed possibly when the room was deserted. There are no signs of vandalism in this ruin.[a]

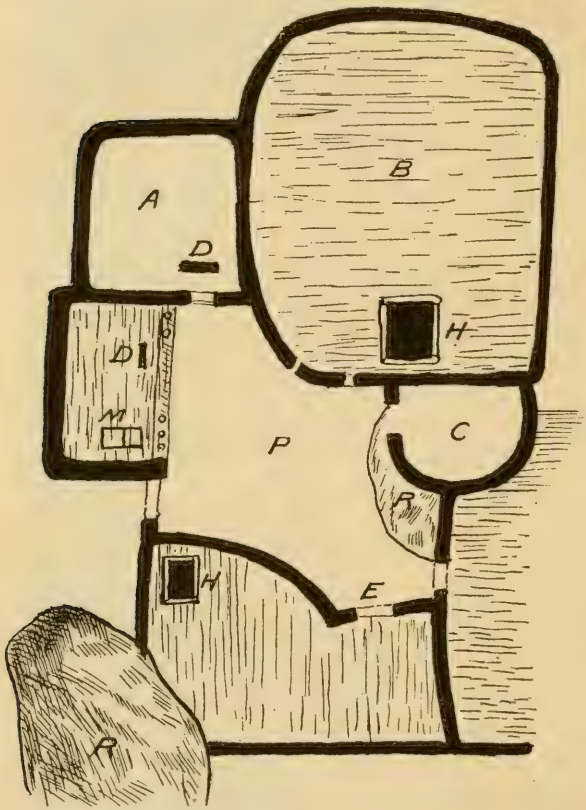


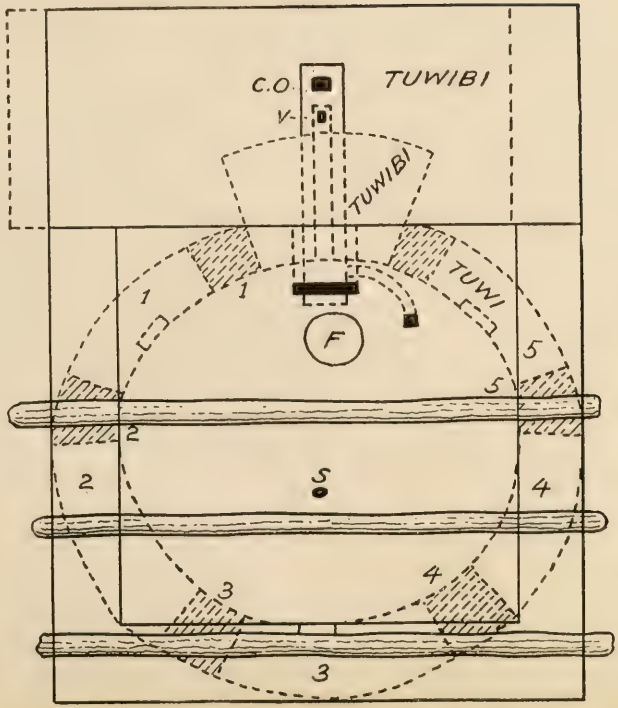
FIG. 2. Ground plan of Trickling-spring House.

A, *B*, *C*, rooms; *D*, *D*, deflectors; *E*, doorway; *H*, *H*, hatchways; *M*, metate; *P*, plaza; *R*, *R*, rock fragments.

CHARACTERISTIC FEATURES OF RUINS

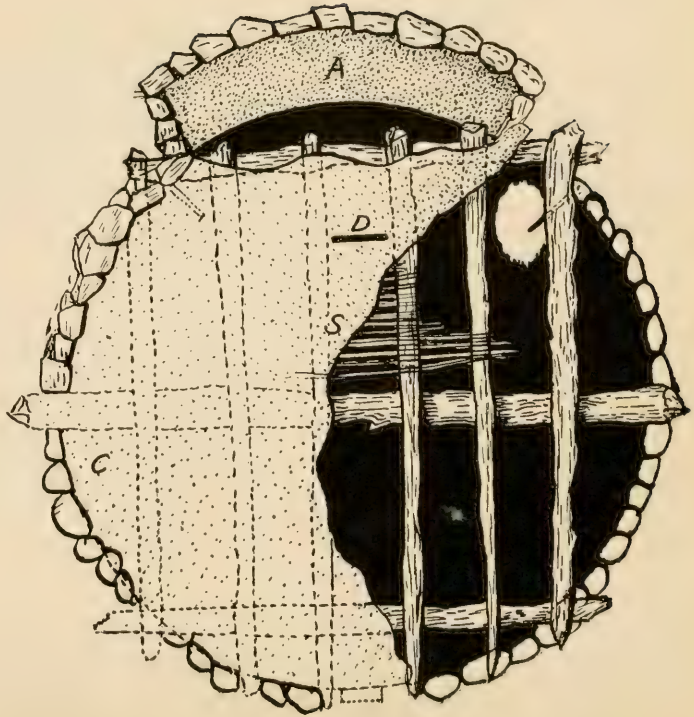
The existence of recesses and of refuse heaps back of the buildings in caves is characteristic of Mesa Verde cliff-dwellings. In the cliff-houses of the Canyon de Chelly and Marsh Pass regions they rarely exist, the house walls being built against the rear wall of the cave,

[a] Trickling-spring House is not located on the accompanying map and, so far as could be ascertained, had not been visited by archeologists previously to the writer's visit. A young Navaho guided the writer to it a short time before he left the region.



a. RELATION IN PARTS OF CIRCULAR AND RECTANGULAR KIVAS

1, 2, 3, 4, 5, banquettes with pilasters thereon; *C. O.* ceremonial opening; *F*, fire-hole; *S*, sipapū (symbolic opening into underworld); *V*, ventilator.



b. SCAFFOLD HOUSE

A, large banquette; *C*, adobe roof covering; *D*, deflector; *S*, stick construction supporting roof.

DIAGRAM SHOWING KIVA ROOF CONSTRUCTION

leaving very little space behind them for refuse or fallen débris. This latter feature, due to the geological character of the caves, is also prominent in the cliff-dwellings of the Red Rock country, at the headwaters of the Verde and its tributaries, and is likewise found in a few cliff-houses of the Gila visited by the writer. From one point of view the use of the wall or walls of the cave as house-walls marks a typical form of cliff-dwelling, or a dependent village, distinguished from a cliff-dwelling like Cliff Palace, the walls of which are independent or free on all sides from the cliffs.[a]

The masonry of the Navaho Monument ruins is crude as compared with that found in the ruins of the Mesa Verde National Park, and walls made of adobe supported by upright sticks are more numerous. The character of the masonry may be due in part to the slab-like character of the building stones, and possibly to their greater hardness. The relative predominance of adobe walls supported by upright sticks was fostered by the ease with which they could be constructed and the quantity of clay available for building purposes. Comparison of the masonry of ruins in the Navaho Monument with that of the Black Falls region shows a resemblance much greater than that existing between either group and the cliff-houses of the Mesa Verde region.

There is no architectural feature in Southwestern ruins more distinctive than the ceremonial rooms, or kivas, but as these have never been recognized throughout a large area of Arizona, it is important to determine the character of the ceremonial rooms of the Navaho Monument ruins and to compare them with kivas at present used by the Hopi.

While as a rule there is great similarity in secular rooms in different culture areas of the Southwest, the more archaic ceremonial rooms of these regions vary considerably. The rooms ordinarily called kivas are of two distinct types, circular and rectangular. There are two kinds of circular kivas,[b] one having pilasters and banquettes to support the roof, the other without pilasters, apparently roofless, but surrounded by high walls as if for the purpose of obscuring the view from neighboring plazas. The circular kivas commonly do not form a part of the house mass, being separated some distance from the secular rooms. From all that can be learned it appears that the round kiva is an ancient type, its position in the rear of the cave in such cliff-dwellings as Spruce-tree House and Cliff Palace indicating that this form is as old as the building itself. The circular type, with pilasters, is confined wholly to the eastern region, having been reported from the Mesa Verde, the San Juan and many of its tributaries, Chaco

[a] Of course some of the rooms in Cliff Palace, especially those at the western extension of the northern end, are dependent, the cliff forming their rear walls.

[b] Both kinds of circular kivas are found in the cliff-ruins at Casa Blanca and in Mummy cave in the Canyon de Chelly.

canyon, and certain ruins west of the Rio Grande. Circular kivas somewhat modified are found also in many of the Rio Grande pueblos, where they are still in use. A subtype of circular kivas without pilasters but provided each with one large banquette is the common form of circular ceremonial room in the Navaho National Monument and the Canyon de Chelly. The modern representative of this subtype is the Snake kiva of the Hopi, which has become rectangular, the large banquette (*tuwibi*, pl. 14) being modified into the "spectators," or elevated surface of the floor.

The corresponding ceremonial rooms at Zuñi and in the prehistoric Hopi pueblos are rectangular in form and of simpler architecture. Similarly shaped ceremonial rooms, not subterranean, are still in use in modern Hopi pueblos. As a good example of this archaic form of ceremonial room at Walpi may be mentioned that in which the Flute altar is erected and in which the Flute secret rites are performed.[a] This ancestral room of the clan is a rectangular chamber forming part of the second floor, and is entered from one side. The Flute clans came from a pueblo, now a ruin, in the north, but after union with the Ala, who lived at Tokónabi, they settled at the Snake pueblo, Walpi. So it may be supposed that their ancestors also had no special kiva, but celebrated their secret rites in an ordinary house.

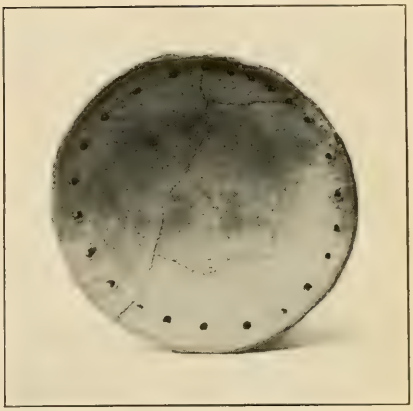
The fraternity of Sun priests likewise erect their altar and perform their secret ceremonies in a room, not in a kiva; so do the Kalektaka, or warriors. None of these rooms is commonly regarded or enumerated as a kiva, but such chambers are believed to be the direct representatives of the ceremonial rooms built above ground as a part of the house, in the manner more characteristic of ceremonial rooms in Arizona ruins.

The ruins in the Navaho Monument have ceremonial rooms allied on one side to the kivas of the San Juan region, and on the other to rooms in the Little Colorado ruins that may have been built for ceremonial use. The latter are constructed above ground, inclosed by other houses, and are rectangular in shape, with lateral doorways. Some of these rooms, as at Betatakin, contain each a fire screen and a fire-hole, as in a circular kiva, the ventilator being replaced by a lateral doorway. It is possible that when the Snake people inhabited their northern homes, before they came to Walpi, their ceremonial rooms were not built, as at present, partly underground, and placed at a distance from the secular houses. The ceremonial rooms of this clan and of immediate relatives when living at Tokónabi or in the Navaho Monument region may have resembled those of the Black Falls

[a] These rites in all the Hopi pueblos are performed, as in ancient times, in rectangular rooms not called kivas. The Snake rites are performed now, as when the clan lived at Tokónabi in subterranean rooms (kivas), the present form of which is rectangular instead of circular, as at Tokónabi.

a. FOOD BOWL

Cat. No. 257781. Diameter, 4¼ inches.



b. CLAY DISK WITH PERFORATED BORDER

Cat. No. 258330. Diameter, 5¼ inches.

c. DIPPER

Cat. No. 257779 Height, 4½ inches.

d. FOOD-BOWL WITH HANDLE

Cat. No. 257780. Diameter, 6 inches.

POTTERY FROM NAVAHO NATIONAL MONUMENT

cluster of ruins.[a] Their subterranean position and separation from other rooms may be regarded as modifications due to foreign influences after the clan arrived at Walpi.[b]

The sunken or subterranean situation of the ceremonial assembly room, or kiva, of the Pueblo region is an architectural survival of a people whose secular and ceremonial rooms were subterranean. This feature may not be autochthonous in this area, or limited to it geographically, having probably been derived from people of kindred culture of the West coast, as pointed out by Mr. Ernest Sarfert's argument on this point, which would seem to be conclusive if subterranean kivas could be found in the Gila and Little Colorado regions.[c]

The forms of pueblo kivas, circular or rectangular, are not derived one from the other, but suggest different geographical origins. The circular form, confined to the eastern Pueblo area, bears evidence of having been derived from the culture of a people inhabiting a forested region; while the rectangular form strongly suggests a people with a treeless habitat. Both circular and rectangular subterranean assembly rooms existed in aboriginal California in historic and prehistoric times. The archaic or prehistoric culture of the Pueblo region is closely related to that of the West coast in other particulars also, that do not concern the subject of this article.

When the Snake clans lived at Tokónabi, and later at Wukóki (on the Little Colorado), so far as known they had no subterranean rooms isolated from the others for ceremonial purposes, but used rooms so closely resembling other apartments that they may be called "living rooms." Even when they came to the Hopi mesas they may not have had at first a specialized ceremonial chamber. A study of Arizona ruins reveals no rooms identified as ceremonial that are isolated from the house masses. This is true of cliff-dwellings and pueblos, and it is probable that the differentiation and separation of kivas from secular houses, found in modern Hopi pueblos, are an introduced feature of comparatively late date. At Zuñi a rectangular room, not separated from the house mass, serves as a kiva, the custom in this respect approaching more closely that found among their kindred, the ancient people of the Little Colorado river, than among the more modified Hopi of the present time.

While some of the rooms identified as ceremonial in preceding pages are rectangular in shape and not isolated from secular rooms, the circular type seems also to have been found in Utah, and at Kitsiel and ruins near it. South of Marsh pass circular kivas are less abun-

[a] It appears that in some of the ruins of the Navaho National Monument there were both circular subterranean kivas and rectangular rooms used for ceremonial purposes. At Wukóki the former do not exist, but two of the latter can be recognized, one of which has a construction like a ventilator.

[b] None of the five Walpi kivas is older than 1680, and one or two are of later construction.

[c] Haus und Dorf bei den Eingeborenen Nordamerikas, in *Arch. für Anthr.*, N. F., Bd. VII, Heft 2 and 3, 1908.

dant, and it appears that somewhere in this region is a line of demarcation between ruins with circular kivas and those with rectangular kivas. In prehistoric ruins from Marsh pass southward[a] to the Gila valley no rooms have ever been identified as kivas, although in the cavate ruins called Old Caves, near Flagstaff, are subterranean rooms entered from the floor of a room above, which may have served for the performance of religious rites.[b]

From a comparison of some features of the kivas in the cliff-dwellings of the San Juan and its tributaries with those of the Navaho Monument it would appear that while the ceremonial rooms of the latter in certain details are like those of the former, in some cases their form and position are different. So far as this resemblance goes, it may be reasoned that the San Juan ancients influenced by their culture the northern Arizona cliff-dwellers, but there is scant evidence of the reverse, that is, that the San Juan pueblos borrowed from the culture of the northern Arizonians any architectural features, especially in the form and construction of their kivas. The theory would be logical that the prehistoric migration of culture was down rather than up the river, and the symbolism of the pottery contributes interesting data supporting this conclusion.

MINOR ANTIQUITIES

Notwithstanding the limited duration of the writer's visit to the Navaho National Monument, a few specimens of stone, wood, pottery, and other objects were collected. The whole pieces of pottery, numbering 14 specimens (pls. 15–18), the majority of which came probably from Inscription House and other ruins near Red Lake, were presented to the Smithsonian Institution by Mr. Stephen Janus, Navaho agent at Tuba, who accompanied the writer on the trip to the Marsh Pass ruins. Fragments of pottery were picked up on the surface at Betatakin, Kitsiel, and several other ruins, and the most characteristic of these were brought back to Washington. No excavations were attempted, nor could all objects that were seen be brought away. Although up to within a few years these ruins were practically in the condition they were when abandoned, unfortunately of late they have been despoiled and many beautiful specimens have been taken from them. Many objects still remain which should be removed lest they fall into improper hands.

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[a] The circular kivas of Kükütcomo, the twin ruins on the mesa above Sikyatki, near Walpi, are the only ceremonial rooms of this form known from the Hopi mesas. These were the work of the Coyote clan and are of Eastern origin.

[b] There are two types of cavate ruins, or rooms artificially excavated in the tops or faces of cliffs, near Flagstaff. In one type, Old Caves, the entrance to the subterranean rooms is vertical; in the other, New Caves, it is from the side. In one type the walls of masonry are built above the caves; in the other in front of them. The common feature is the existence of chambers artificially excavated in the cliff. Both types differ essentially from pueblos built in the open or in natural caverns, although some of the kivas of the latter are excavated in the solid rock.

a. ROUGH VASE OF CORRUGATED WARE
Cat. No. 257777. Height, 7 inches.

b. VASE WITH CONSTRICTED NECK
Cat. No. 257778. Height, 8 inches.

POTTERY FROM NAVAHO NATIONAL MONUMENT

Pottery

The pottery collected consists of jars, vases, food bowls, and circular disks with a row of perforations about the margin. There are also dipper handles and broken ladles of the usual shape. Some of these specimens are of corrugated ware, others have smooth surfaces with painted decoration. The proportion of corrugated and indented ware found in the Navaho Monument ruins is about the same as in the Mesa Verde National Park. The finest coiled ware was obtained from the latter locality. Several fragments of flat dishes, perforated on their margins (pl. 15, *b*), or colanders having holes in the middle, form part of the collection.[a]

The most instructive form of pottery in the collection brought back from northern Arizona is a decorated globular vase of black-and-white ware (pl. 16, *b*). The decoration on this specimen is not confined to the exterior but is found also on the inner surface of the lip; it consists mainly of triangles so united as to form hour-glass figures. A unique design on this vessel consists of two parallel lines, each with dots on one side, suggesting similar bands in red on the inner wall of the third story of the square tower of Cliff Palace.

Three small bowls of crude ware are fluted on the outside, the ridge, or fluting, being raised somewhat above the surface of the bowl and having a zigzag course. One of the best of these unique ceramic forms has this fluting broken into S-shaped figures, as shown in the accompanying illustration (pl. 17, *a*).

The writer collected also several perforated clay disks which were possibly used as spindle whorls, although they may have been gaming implements. A similar disk made of mountain-sheep horn was found at Kitsiel.

The largest and one of the finest vases (pl. 18, *a*) from the neighborhood of Red Lake is also of black-and-white ware. The decoration is external and consists of black figures covering the neck and upper body. The base is rounded and the lip slightly flaring. This vase may have been used for containing water or possibly as a receptacle for prayer (corn) meal. The food bowls from Red Lake are chiefly of black-and-white ware, the red and yellow varieties being less numerous. A common feature in food bowls of this region is a handle on one side, as shown in plate 15, *d*. Some of these vessels, although of smooth ware, are without decoration on either the exterior or the interior.

The shallow, slightly concave clay disk[b] shown in plate 15, *b*, is characteristic in possessing a row of holes near the rim. This disk

[a] These dishes resemble those sometimes used by the Hopi for sprinkling water on their altars as a prayer for rain. They may have been used also in sifting sand on the kiva floor, to form a layer upon which the sand picture is later drawn with sands of different colors.

[b] Small perforated clay disks are not rare here, as in other ruins. They were used in the same way as the horn disk mentioned on page 30.

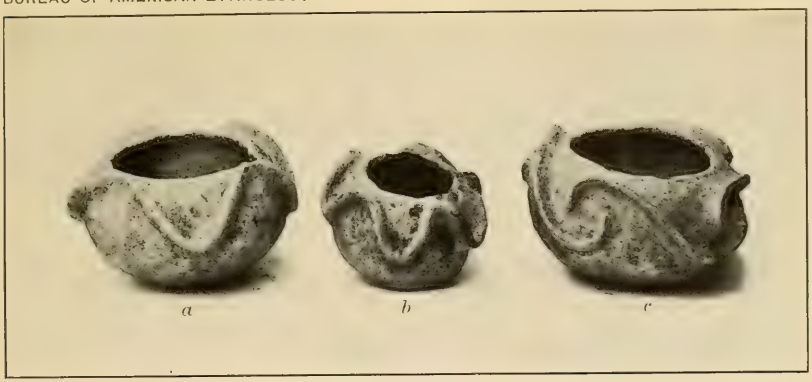
seems to represent a common type, as several fragments with similar holes were found on the surface of the ruins. The same or related forms appear to have been common in ruins near the Hopi pueblos. These are found in the collection of votive offerings now in the Peabody Museum at Cambridge, from Jedito spring, near Awatobi, and the writer has discovered specimens elsewhere in Hopi ruins, a brief mention of which occurs in a report on the archeological results of his expedition to Arizona in 1895.[a]

Several fragments of deep bowls, each having a handle (pl. 18, *b*) on the surface, were obtained in the sands below cliff-house B; these are commonly of red ware and have reddish-brown and black decorations. A small dish of black-and-white ware (pl. 15, *a*) has the rim slightly elevated and rounded on one side. The cups or mugs from this region are shaped unlike those from the Mesa Verde. Mugs from the latter region are cylindrical in form or the walls incline slightly inward so that the diameter of the opening is somewhat less than that of the base. The lip is thick and decorated. One of these cups, here figured, has a constricted neck, and a slightly flaring rim which is thin and undecorated. The decoration of another cup (pl. 15, *c*) suggests the designs on several mugs from the Little Colorado ruins. So far as form and decoration are concerned, this cup, or handled vase, might have come from Homolobi, Chevlon, or Chaves pass.[b]

The designs on fragments of pottery found in ruins in northern Arizona are identical with or related to those from the Black Falls ruins, but differ somewhat from those on pottery from ruins higher up the Little Colorado river. If the history of the modification of ceramic symbols in any of the large composite pueblos of the Southwest be studied, it will be noticed that there are often radical changes, the later symbols not being modifications of earlier ones. Thus modern Zuñi pottery designs differ materially from those found in ruins in the same valley. The modern pottery from East mesa is wholly different from that of Sikyatki, a few miles away. Again, in so-called modern Hopi pottery, Tewa symbols derived from the Rio Grande have replaced old Hopi symbols dominant before the advent of Tewa clans. The changes in pottery symbols in every large composite pueblo are not due to evolution of the modern from the ancient, but reflect the history of the advent of new clans, powerful enough to substitute their designs for those formerly existing. One of the problems of the ethnologist is to determine symbols associated with certain clans, and by means of legends to identify clans with ruins. Having determined the symbols introduced by certain clans and the

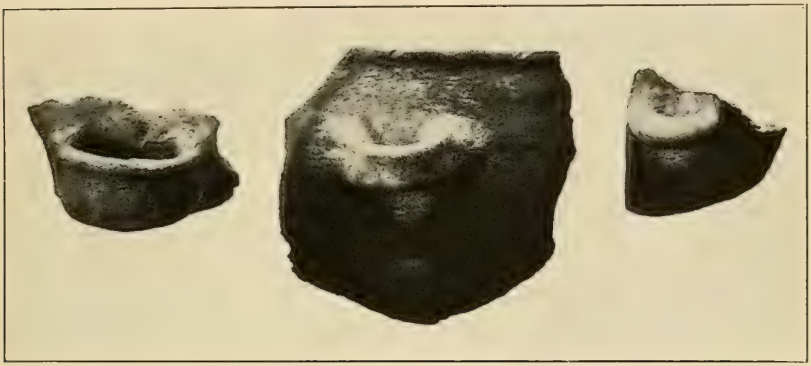
[a] In *Seventeenth Annual Report of the Bureau of American Ethnology*, pt. 2.

[b] Compare figures from these ruins, in the *Twenty-second Annual Report of the Bureau of American Ethnology.*



a. BOWLS BEARING RELIEF ORNAMENTS

(From left to right): Cat. Nos. 257783, 257784, 257782. Heights, 2⅛ inches, 2 inches, 2¾ inches.



b. HANDLES OF FOOD-BOWLS

Cat. No. 258326.

c. STONE IMPLEMENTS

(From left to right): Cat. Nos. 258334, 258335, 258336, 258337. Dimensions, 6 x 4 x 1⅜ inches; 5¼ x 3¾ x 2½ inches; 4½ x 3¾ x 2 inches; 4⅜ x 2¾ x 2½ inches.

POTTERY AND STONE IMPLEMENTS FROM NAVAHO NATIONAL MONUMENT

places where these clans halted in their migrations and built pueblos, the course of these prehistoric movements may be followed. Comparison of symbols on pottery from northern Arizona with those from Black Falls ruins support, so far as they go, the legends that the Snake people, who once lived at Wukóki near the Black Falls, lived also in cliff-houses now ruins near Marsh pass or the White mesa. The symbolism indicates the presence of the same clans, and tradition is thereby supported.

Cliff-dwellers Cradle

One of the most instructive specimens collected in the Navaho National Monument was found by Mr. W. B. Douglass in a ruin designated as Cradle House. This object is a cradle made of basket ware, open at one end and continued at the opposite end into a biped extension to serve for the legs. It is decorated on the outside with an

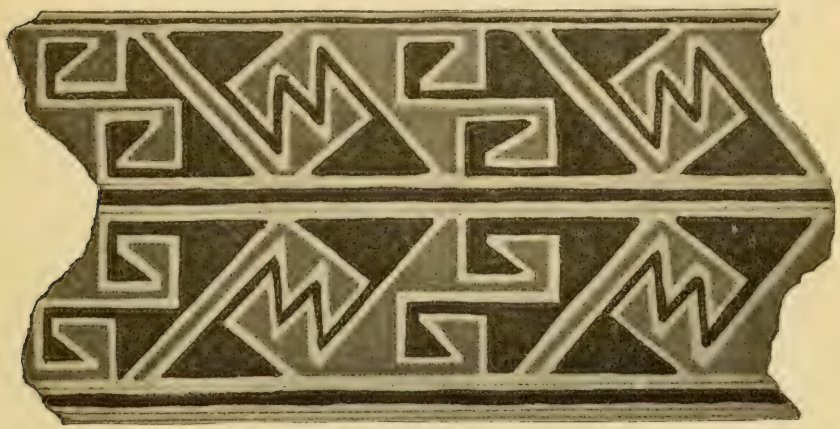


Fig. 3. Design on cliff-dwellers cradle.

archaic geometric ornamentation, the unit design of which is shown in the accompanying illustration. This specimen (pls. 19–21) may be regarded as one of the finest examples of prehistoric basketry from the Southwest; moreover, with one exception, it is the only known cradle of this form. A pair of infant's sandals found with the cradle leaves no doubt as to its use, while the character and symbolism of the decoration refer it to the ancient cliff-house culture. The design (fig. 3) suggests that which characterizes certain specimens of the well-known black-and-white pottery found in the San Juan drainage. Evidences of long use and repair appear, especially on one side. Unfortunately, the specimen, although entire when found, later was broken across its middle.

The only other known cradle of this type was brought to the attention of ethnologists by Dr. W J McGee when in charge of the

anthropological exhibit at the St. Louis Exposition. This was found in San Juan county, Utah, not far from the Colorado river.[a] This specimen is better preserved than that here figured, but the decoration is practically identical; so near, in fact, that the two might have been made by the same woman.

Miscellaneous Objects

The stone implements (pl. 17, *c*) consist of axes, pounding stones,[b] and hatchets. On one of the roofs at Kitsiel there was picked up a curved stick[c] identical with those placed by the Walpi Snake priests about the sand-painting of their altar. A good specimen of a planting stick and a rod formerly used as a spindle were found near by; the latter is a perforated disk made of horn. A flute identical with those used at the present day by Flute priests at Walpi was found at Betatakin, thus tending to support the legend that the Flute clan once lived at the latter pueblo.

SUMMARY AND CONCLUSIONS

The route chosen by the author for visiting the ruins of the Navaho National Monument is via Flagstaff and Tuba, the distance being not far from 200 miles to Marsh pass and 10 miles beyond to the largest cliff-dwellings. Although the wagon road is long, requiring a journey of at least five days, it may be traversed with carriage or buckboard, the sandy stretch between Tuba and Red Lake being the most difficult. The trail from Marsh pass to the great cliff-dwellings, although now passable only on horseback, could be made into a wagon road at small expense.

The nature of the cliffs in which the ruins of the Navaho Monument are situated favored the construction of cliff-dwellings rather than of open pueblos in this region. These cliffs are full of caverns, large and small, presenting much the same condition as the cliffs of the red sandstone elsewhere in the Southwest, as the Mesa Verde, Canyon de Chelly, the Red Rocks south of Flagstaff, and other sections where caverns abound. Fragments of fallen rocks present good plane surfaces for walls of masonry, and there is abundant clay for plastering. Trees suitable for rafters and beams are not wanting. In short, all conditions are favorable for stone and adobe houses in the cliffs. The neighboring Sethlagini mesa is of different geological formation; in it are no caverns, the mesa top is broad, and ruins thereon are necessarily

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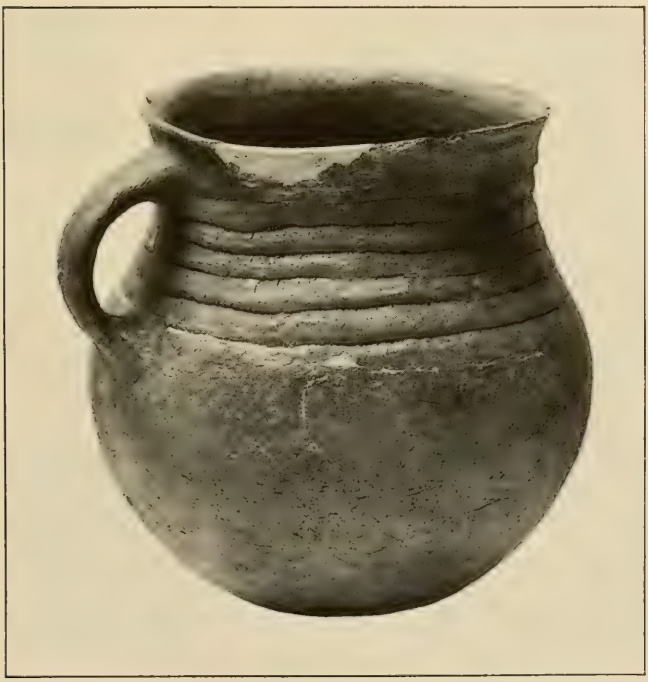
a The finder was Mr. E. B. Wallace. This specimen was owned at one time by Mr. J. T. Zeller, an architect of St. Louis. The writer has been informed that Mr. Zeller sold the cradle and that it is now in the Field Museum of Natural History in Chicago.

b A common feature of stone mauls is a raised ferrule above and one below the groove to which the handle is attached.

c These sticks, or "crooks" (*gnela*), found on the Antelope altar in the Walpi Snake ceremony are reported to have been brought to Walpi from Tokónabi.

a. LARGE BLACK-AND-WHITE VASE
Cat. No. 257774. Height, 17 inches.



b. LARGE VASE WITH HANDLE
Cat. No. 257787. Height, 8¼ inches.

POTTERY FROM NAVAHO NATIONAL MONUMENT

open pueblos. The effect of difference in geological structure is nowhere more evident than in these adjacent formations.

If environment has had so marked an influence on the character of building, we can readily see how it has affected arts and crafts. We can hardly imagine a people living any length of time in this region without being mentally influenced by the precipitous cliffs that rise on all sides. The summits of these heights are eroded into fantastic shapes resembling animals or grotesque human forms. The constant presence of these marvelous forms, of awe-inspiring size and weird appearance, exerted a profound influence on the supernatural ideas of the inhabitants. Here were born many conceptions of earth gods and the like, survivals of which still remain among the Hopi.

As a rule the cliff-houses are not situated in sight of the main stream, but are hidden away in secluded side canyons, approached by narrow entrances, their sites having been determined no doubt by the position of the springs with their constant water supply.

Almost every side canyon, even in a dry season, has its spring of water which, trickling out of the rocks, follows the canyon bed until it is finally drunk up by the thirsty sands. Often water seeps out of a soft stratum of rock in the cave itself, where it was gathered in artificial reservoirs that in ancient times furnished an adequate supply for the inhabitants. One feature of these side canyons is that they enlarge into basins surrounded on all sides by lofty cliffs. Many of these basins are so hidden that they can be discovered only by following dry stream-beds from their junction with the creeks. How many of these basins are still undiscovered no one can yet tell. In these basins now covered with bushes the aboriginal farms were probably situated.

As the width of the valley of Laguna creek from Marsh pass to the point where the stream receives its largest branches on the left bank varies, the amount of arable land is greater in some places than in others. In stretches where the stream almost washes the bases of the ruins there could have been no extensive farming lands. The creek meanders through the soft clay and sand which fill the valley to the depth of many feet, forming treacherous banks that are continually falling and changing the course of the stream, so it is quite possible that the present configuration of the valley is very different from what it was when the cliff-dwellings were inhabited. If the occupants once had farms within its limits all traces of them would have long since been obliterated. Although too much credence should not be given to Navaho traditions, it is not unreasonable to believe that in one particular at least they are correct. These state that, before the introduction of sheep, grass was much higher in the level part of the valley than at present, and formerly game (at least the mountain sheep and the antelope) may have been more abun-

dant. This condition would have exerted a marked influence on the life of the cliff-dwellers. Pictographs show that the ancient people, either here or in their former homes, were familiar with these animals, and various objects of bone and horn are significant in this connection.

The Navaho National Monument (see sketch map, pl. 22) contains two kinds of ruins,[a] cliff-dwellings and pueblos. Most of the latter are situated on promontories or on low hills. The structural features of the cliff-dwellings are characteristic, their walls being constructed of stone or adobe built against, rarely free from, vertical faces of the cliff.

There are two types of kivas, one circular and subterranean, allied to those of the Mesa Verde, the other rectangular, above ground, entered from the sides.

The masonry of these northern ruins is crude, resembling that of modern Walpi. The component stones are neither dressed nor smoothed, but the walls are sometimes plastered. There is a great similarity in architecture. No round towers[b] relieve the monotony or impart picturesqueness to the buildings. The walls of ruined pueblos in this region and the ceramic remains closely resemble those at Black Falls on the Little Colorado. A prominent feature of the walls is a *jacal* construction in which the mud is plastered on wattling between upright poles. The ends of many of these supports project high above the ground, constituting a characteristic feature of the ruins. This method of wall construction is unknown at Black Falls or at Walpi, but survives in modified form in one or more Oraibi kivas and in one at least of the Mesa Verde ruins.[c] It has been described by Mr. Cosmos Mindeleff as common to several ruins in the Canyon de Chelly.

The key to the culture of the people from which the cliff-dweller culture was derived is probably the kiva, which furnishes also a good basis for the classification of the Pueblos and cliff-dwellers into subordinate groups.

Architecturally the kiva reached its highest development in the Mesa Verde region, where it is a circular subterranean room with pilasters and banquettes, ventilators and deflectors, fireplaces and ceremonial openings, the features of which have been described elsewhere. As we follow the San Juan down to its junction with the Colorado we find a gradual simplification of the circular type of

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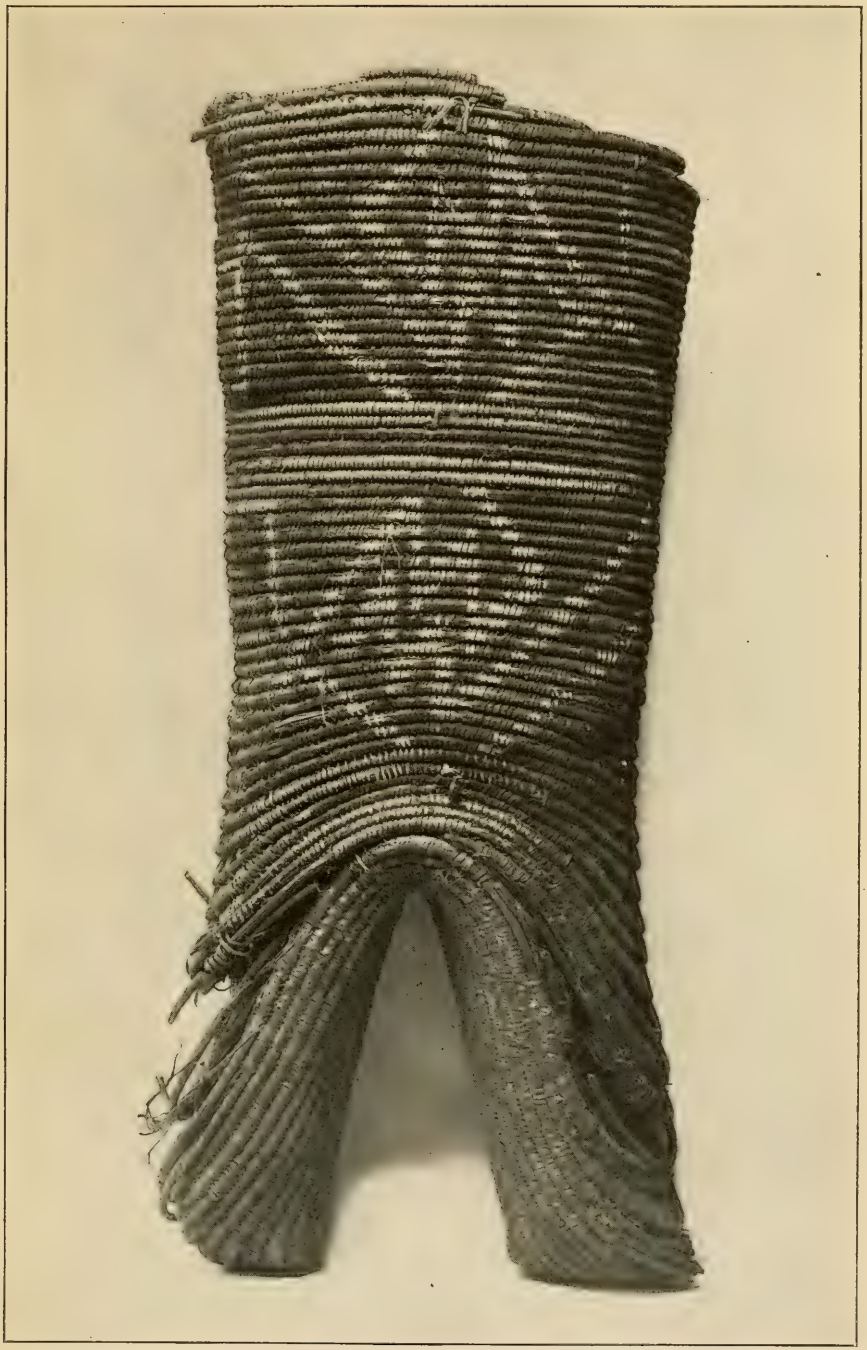
[a] The writer was not able to determine the exact site of the traditional Tokónabi, but believes one is justified in considering the ruins visited to be prehistoric houses of the Snake (Flute), Horn, and other Hopi clans whose descendants now live in Walpi.

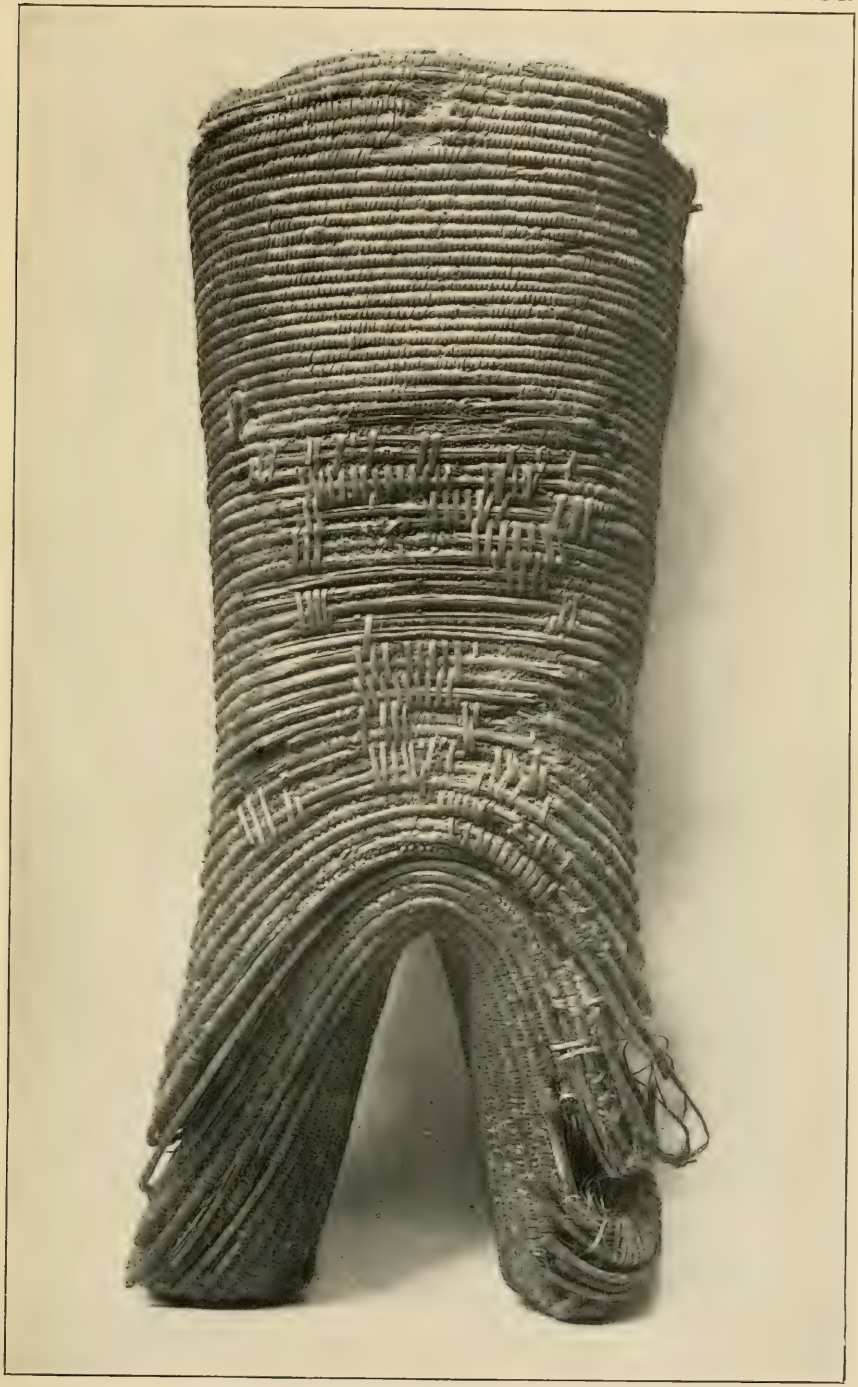
[b] While circular subterranean kivas are found in some of the ruins, none of these have the six pilasters so common higher up on the San Juan, nor have these rooms ventilators like those of Spruce-tree House. Some of the ruins have rectangular kivas, above ground, entered from one side.

[c] The best example of walls of this kind is found in an undescribed cliff-ruin in the canyon southwest of Cliff Palace.

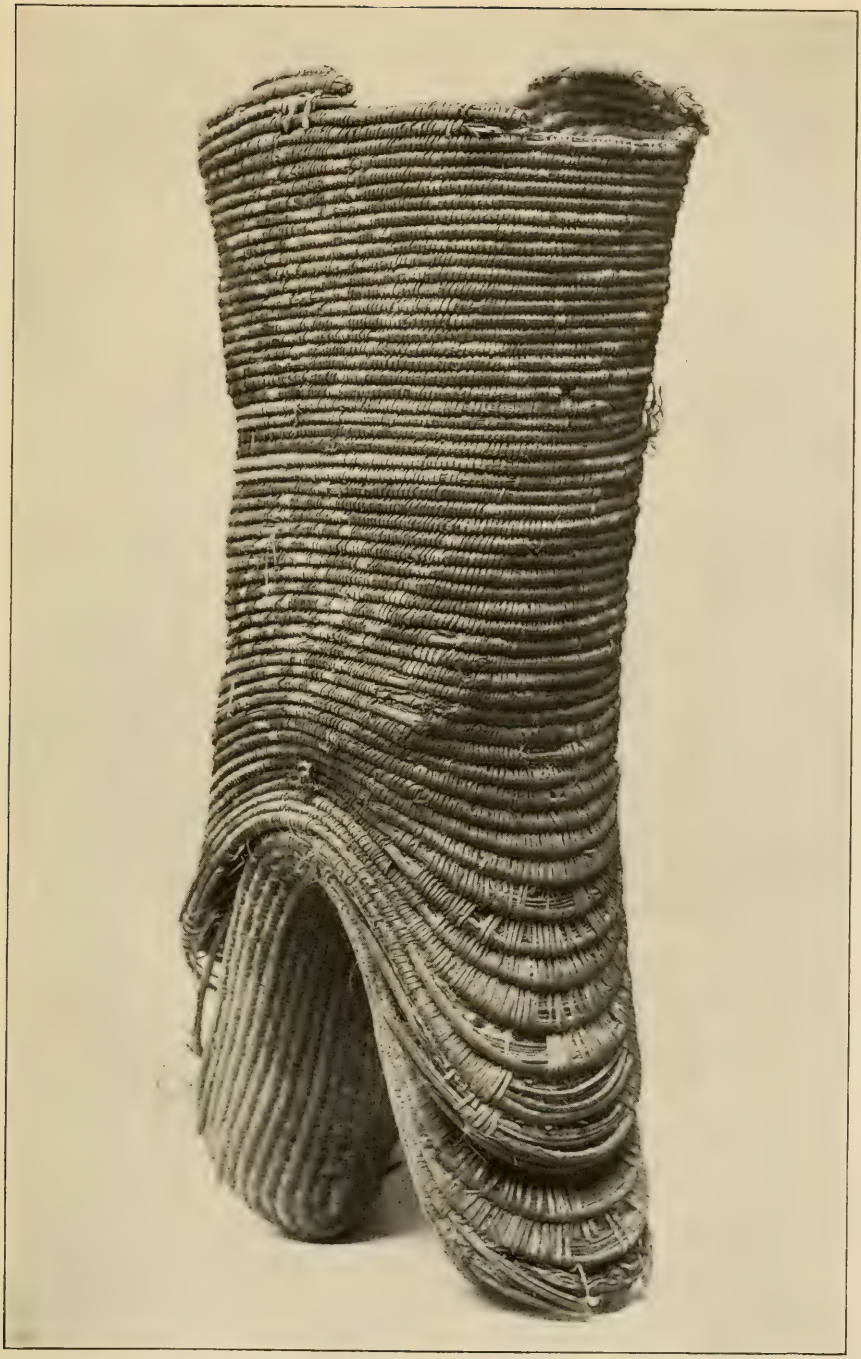


CLIFF-DWELLERS CRADLE—FRONT

Dimensions: length, 22 inches; breadth, 9 inches; diameter, 6 inches.



CLIFF-DWELLERS CRADLE—REAR



CLIFF-DWELLERS CRADLE—SIDE

kiva by the elimination of pilasters, ventilators, and other features, the round kiva being here represented by rooms in which almost the only architectural feature remaining is the large banquette. The question naturally arising in this connection is, whether the circular kiva in the eastern region is a development of that simpler form existing in the western or whether the latter is a degenerate form of the eastern. In other words, does the evidence show that this particular modification spread from the east down the San Juan or from the west up the river to the east? In this connection it may be urged that originally the form of circular kiva lacking pilasters extended along the entire course of the San Juan and that the kivas of the Mesa Verde became highly specialized forms in which pilasters were developed, while those lower down the river remained the same. We can not definitely answer either of these questions, but taken with other evidence it would seem that the circular form of kiva originated in the eastern section and gradually extended westward.

The modern Hopi rectangular form of ceremonial room situated underground seems in some instances to have derived certain features from the circular subterranean kiva.

The chief kiva at Walpi, that used by the Snake fraternity, is rectangular and subterranean, while that used by the Flute priests, which is practically a ceremonial room, is a chamber entered by a side doorway. It is suggested that the Snake kiva at Walpi was derived from the circular subterranean kiva of Tokónabi, the former home of the Snake clan in northern Arizona, and that the Flute chamber was developed from the rectangular rooms in the same ruins. The old question, so often considered by Southwestern archeologists, whether the circular subterranean kiva was derived from the rectangular or *vice versa*, seems to the writer to be somewhat modified by the fact that ceremonial rooms of both forms exist side by side in many ancient cliff-dwellings. From circular subterranean kivas in some instances developed square kivas, but the latter are sometimes the direct development of square rooms; the determination of the original form can best result from a study of clans and their migrations.[a]

Naturally the questions one asks in regard to these ruins are: Why did the inhabitants build in these cliffs? Who were the ancient inhabitants? When were these dwellings inhabited and deserted?

It is commonly believed that the caves were chosen for habitations because they could be better defended than villages in the open. This is a good answer to the first question, so far as it goes, although somewhat imperfect. The ancients chose this region for their homes

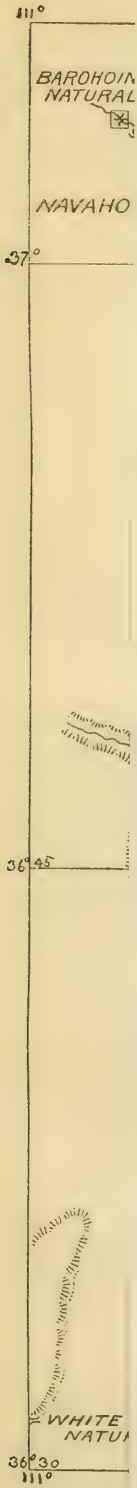
[a] It is generally the custom to speak of the rectangular subterranean rooms of Walpi as kivas, while the square or rectangular rooms above ground, in which equally secret rites are performed, are not so designated. Both types are ceremonial rooms, but for those not subterranean the term *kihu* (clan ceremonial room), instead of kiva, is appropriate.

on account of the constant water supply in the creek and the patches of land in the valley that could be cultivated. This was a desirable place for their farms. Had there been no caves in the cliffs they would probably have built habitations in the open plain below. They may have been harassed by marauders, but it must be borne in mind that their enemies did not come in great numbers at any one time. Defense was not the primary motive that led the sedentary people of this canyon to utilize the caverns for shelter. Again, the inroads of enemies never led to the abandonment of these great cliff-houses, if we can impute valor in any appreciable degree to the inhabitants. Fancy, for instance, the difficulty, or rather improbability, of a number of nomadic warriors great enough to drive out the population of Kitsiel, making their way up Cataract canyon and besieging the pueblo. Such an approach would have been impossible. Marauders might have raided the Kitsiel cornfields, but they could not have dislodged the inhabitants. Even if they had succeeded in capturing one house but little would have been gained, as it was a custom of the Pueblos to keep enough food in store to last more than a year. In this connection the question is pertinent, While hostiles were besieging Kitsiel how could they subsist during any length of time? Only with the utmost difficulty, even with aid of ropes and ladders, can one now gain access to some of these ruins. How could marauding parties have entered them if the inhabitants were hostile? The cliff-dwellings were constructed partly for defense, but mainly for the shelter afforded by the overhanging cliff, and the cause of their desertion was not due so much to predatory enemies as failure of crops or the disappearance of the water supply.

The writer does not regard these ruins as of great antiquity; some of the evidence indicates that they are of later time. Features in their architecture show resemblances derived from other regions. The Navaho ascribe the buildings to ancient people and say that the ruined houses existed before their own advent in the country, but this was not necessarily long ago. Such evidence as has been gathered supports Hopi legends that the inhabitants were ancient Hopi belonging to the Flute, Horn, and Snake families.

There is no evidence that cliff-house architecture developed in these canyons, and rude structures older than these have been found in this region. Whoever the builders of these structures were, they brought their craft with them. The adoption of the deflector in the rectangular ceremonial rooms called kihus implies the derivation of these rooms from circular kivas, and all indications are that the ancient inhabitants came from higher up San Juan river.

Many of the ruins in Canyon de Chelly situated east of Laguna creek show marked evidence of being modern, and they in turn are not so old as those of the Mesa Verde. If the ruins become older as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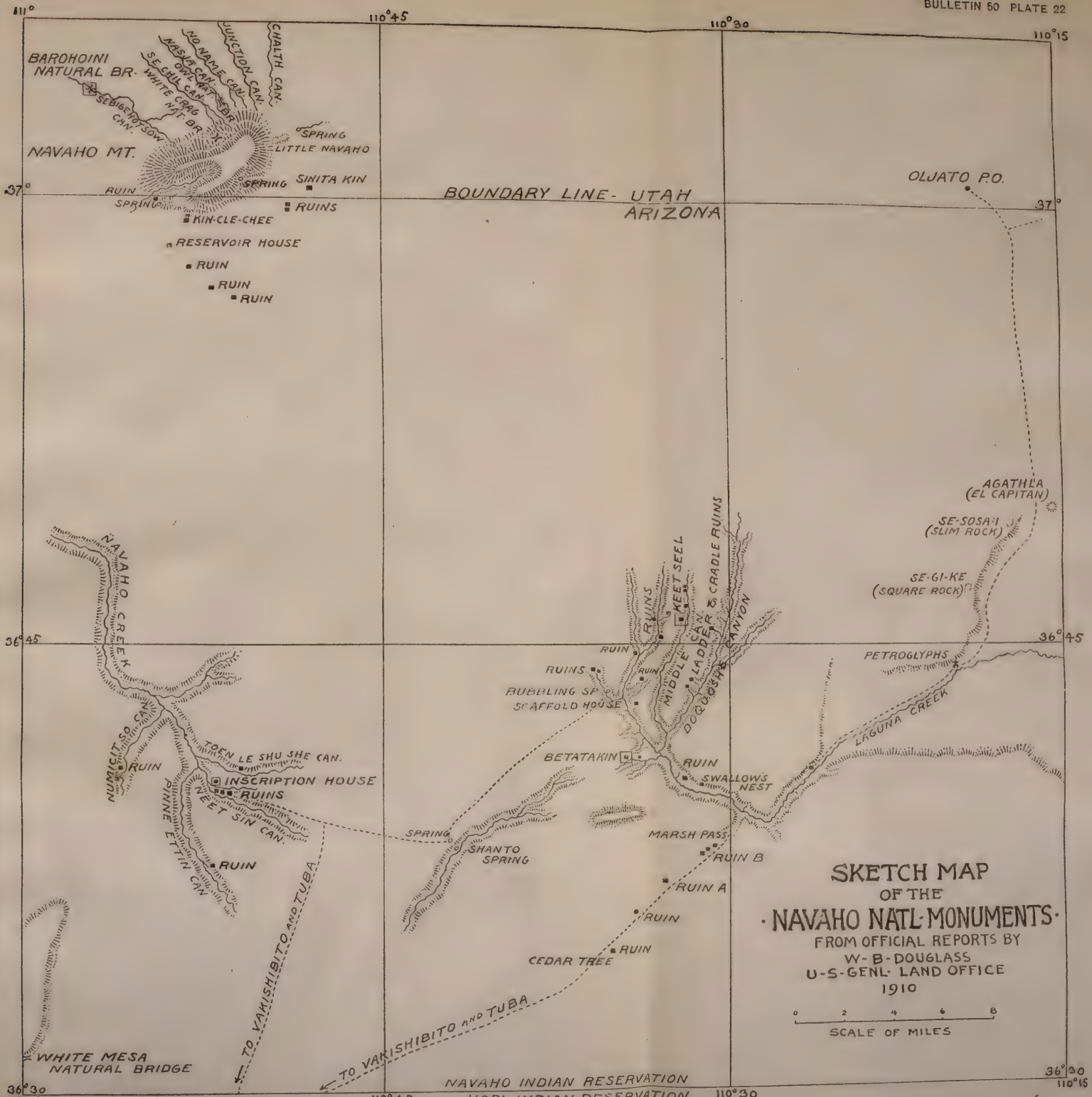
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BAROHOINI NATURAL BR.
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WHITE CRAG NAT. BR.
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NASJA CAN.
NO NAME CAN.
JUNCTION CAN.
CHALTH CAN.
NAVAHO MT.
SPRING
LITTLE NAVAHO
SPRING
SINITA KIN
RUIN
SPRING
RUINS
KIN-CLE-CHEE
RESERVOIR HOUSE
RUIN
RUIN
RUIN
BOUNDARY LINE - UTAH
ARIZONA
OLJATO P.O.
AGATHLA (EL CAPITAN)
SE-SOSA-I (SLIM ROCK)
SE-GI-KE (SQUARE ROCK)
PETROGLYPHS
NAVAHO CREEK
RUINS
KEET SEEL
LADDER CANYON
CRADLE RUINS
MIDDLE CANYON
DOQOSHE CANYON
RUIN
RUINS
RUIN
BUBBLING SP
SCAFFOLD HOUSE
LAGUNA CREEK
NUMCIT SO CAN.
TOEN LE SHU SHE CAN.
RUIN
INSCRIPTION HOUSE
RUINS
NEET SIN CAN.
BETATAKIN
RUIN
SWALLOWS NEST
RUIN
SPRING
SHANTO SPRING
MARSH PASS
RUIN B
RUIN A
RUIN
CEDAR TREE
RUIN
TO VAKISHIBITO AND TUBA
TO VAKISHIBITO AND TUBA
WHITE MESA NATURAL BRIDGE
NAVAHO INDIAN RESERVATION
HOPI INDIAN RESERVATION
SKETCH MAP
OF THE
NAVAHO NATL MONUMENTS
FROM OFFICIAL REPORTS BY
W-B-DOUGLASS
U-S-GENL-LAND OFFICE
1910
0 2 4 6 8
SCALE OF MILES

we go up the river the conclusion is logical that the migration of the San Juan culture was down the river from east to west, rather than in the opposite direction. The scanty traditions known to the author support the belief in a migration from east to west, although there were exceptional instances of clan movements in the opposite direction. The general trend of migration would indicate that the ancestral home of the Snake and Flute people was in Colorado and New Mexico.

It is evident from the facts here recorded that the ruins in the Navaho National Monument contain most important, most characteristic, and well-preserved prehistoric buildings, and that the problems they present are of a nature to arouse great interest in them. Having suffered comparatively little from vandalism, these are among the best-preserved monuments of the cliff-dwellers' culture in our Southwest, and if properly excavated and repaired they would preserve most valuable data for the future student of prehistoric man in North America. It is not necessary to preserve all the ruins within this area, but it would be well to explore the region and to locate the sites of the ruins that it contains.

RECOMMENDATIONS

The writer has the honor to recommend that one of the largest two cliff-dwellings in the Navaho National Monument, either Betatakin or Kitsiel, be excavated, repaired, and preserved as a "type ruin" to illustrate the prehistoric culture of the aborigines of this section of Arizona; also that this work be supplemented by excavation and repair of Inscription House, an ancient cliff-dwelling in West canyon.

He also recommends that one or more of the ruins in West canyon be added to the Navaho National Monument and be permanently protected by the Government.

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